BIRD LORE

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EVEN CHRISTIAN RAVEN

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BIRD-LORE

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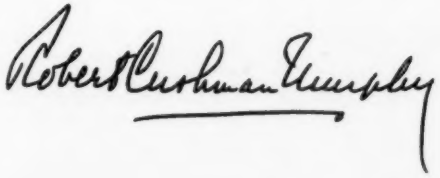
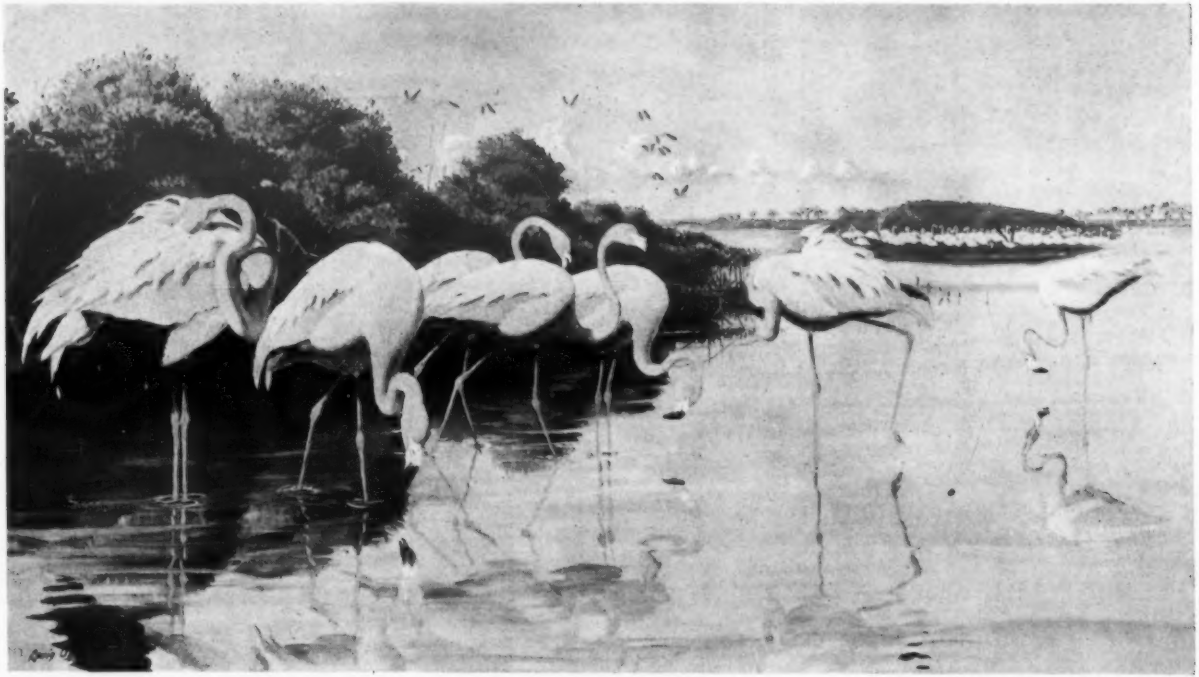
THE PRESIDENT'S PAGE

SANCTUARIES AGAIN—and good news about the maintenance of permanent strongholds for some of the larger and more colorful land and water birds that have been inexorably pushed into limited ranges toward the tip of the Florida peninsula.

Through the coöperation of the Trustees of the Internal Improvement Fund of Florida, as reported in this issue of BIRD-LORE, legal right to patrol and administer certain new districts has been conferred upon the National Association of Audubon Societies, which will work hand in glove with state authorities. Included is a tract on the west shore of Lake Okeechobee, where nesting Limpkins still utter the strange cries that our South American neighbors liken to the wailing of mad widows, and where Everglade Kites still find the land snails which are their only food, and which their needle-like bills prick and paralyze with truly surgical skill. A reef in the lake, reputed to support the largest colony of Glossy Ibises in America, also lies in our new allocation of territory.

Other areas, along the southwest coast of Florida, are washed by the salt or brackish water of the mangrove fringe. Duck Rock, Buzzard and Plover Keys, and Auger Hole are picturesque names. They will never be forgotten by fortunate members who avail themselves of the Association's liberal sanctuary regulations and visit the sites where Herons, Spoonbills, White Ibises, Pelicans, Cormorants and Man-o'-war-birds either nest or gather in spectacular and now unmolested hordes during the non-breeding season.





Courtesy American Museum of Natural History

Flamingoes, by Louis A. Fuertes

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BIRD-LORE

JANUARY–FEBRUARY, 1939

Memories of Louis Fuertes

By **Frank M. Chapman**

MY MEMORIES of Louis Fuertes are so much a part of every day's life that when the editor of BIRD-LORE asked me to prepare this article I had, as it were, only to draw on current events.

My estimate of Louis as artist, man, and friend will be found in BIRD-LORE (1927), *The Auk* (1929), *Natural History* (1937), and in my *Autobiography* (1933). I have tried, therefore, to include here before-unmentioned incidents that will add to his biography as well as to the history of ornithology.

I first met Louis Fuertes in Cambridge, Mass., at the A. O. U. Meeting of 1896 where he was introduced to ornithologists by Elliott Coues, and exhibited specimens of his work. At this time he was making illustrations for Coues, and immediately after the meeting he borrowed, from the Bird Department of the American Museum of Natural History, birds' skins from which to draw. This was the beginning of our friendship.

My first invitation to him to join me in the field was on a trip to the Bahamas to hunt for Flamingoes under the guidance of John L. Bonhote, who was at that time the Governor's private secretary. One of his replies to my letter of invitation is dated April 13, 1902. It reads in part:

Dear Mr. Chapman:

I shall leave here Wednesday night, and from 8 A. M. Thursday until date of sail[ing] I am yours to command. After that will trust the captain.

My job is done, and now all that remains is for me to shut up the people who are writing me letters and buy a pair of leggings; I think I can do it by Wednesday. I have informed none of my New York clients of my proposed stop in their beautiful little city, so expect no clamorers to impede my progress to your side, where I shall cling until sent upon some errand for our common weal. I shall have a few things to buy in New York, but not much. What I want to know is whether two hundred dollars will be enough for me to bring along, and in what form I'd better bring what I do take. You know those things better than I, who have little to do with the mobilization of large sums.

Really all this letter is meant to convey is

that I shall be thankful to you if you will rustle my food supply when you do yours, and to ask your advice about the money business, but it is so muffled up in fluff that you might not notice it unless I fished it out and set it out alone for you to look at, as I have now done.

I'm now getting busy thinking about the trip, for almost the first time, really. As you will be along with the knowledge, I am purposely letting a lot of reading go by and preparing myself only for the necessary things, leaving all the matter of sensations and impressions to work on a clean mental tablet—it's a lot more fun I think.

Well, I'll see you in a couple of days for a couple of months—and give my regards to your family all. Field sparrows and meadowlarks are shying songs through my window in the teeth of a north gale.

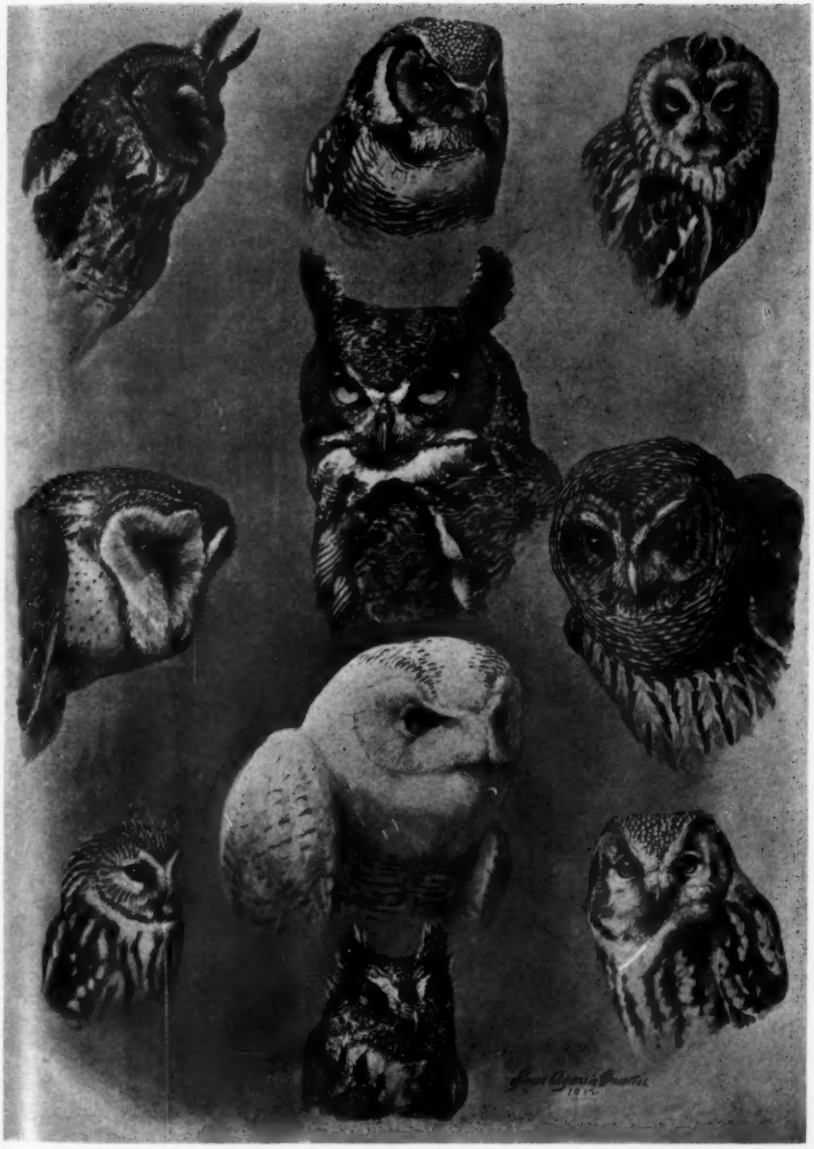
The history of this expedition is told in my *Camps and Cruises*. We did not succeed, on this occasion, in finding nesting Flamingoes, but Fuertes saw the birds at more or less close range and acquired the information and impressions that served him so well in his later paintings of them. These included the background to the American Museum's habitat group, in which a large flock of birds is shown, those in the foreground being life-size, and illustrations for various magazine articles, also a mural in the Flamingo Hotel at Miami Beach and paintings for the New York Zoölogical Society. From time to time we hear of other Flamingo paintings of importance. As late as June, 1938, the American Museum was presented with a Flamingo painting (reproduced herewith) measuring fifty by twenty-eight inches, made by Fuertes in 1924, two years before he started for Abyssinia.

Shortly after returning from this Bahaman trip I was asked by Colonel Fox, Game Commissioner of New York State, to prepare an article for their annual report on the economic relations of birds to man. I could claim no original knowledge of this subject, but I thought I saw here an opportunity to introduce Fuertes to the world through the medium of adequate color illustrations. I therefore consented to prepare the article, provided the Commissioner would supply me with a dozen colored illustrations, the artist and lithographer to be named by me. He readily consented to this condition and I placed the task in Fuertes' hands, selecting Hoen & Company of Baltimore as the reproducers of his paintings. There followed more or less detailed correspondence beginning with Fuertes' letter of September 5, in which he writes (It will be observed that we became acquainted during our Bahaman experiences and that the title 'Mr.' has been omitted):

Well, well—if I didn't get a letter from Chapman!

I should of course be glad to do those twelve pictures for Col. Fox, if no insurmountable obstacle comes up.

For the use of the pictures I've been doing this summer (game water-birds for McMillan's 'Sportsman's Library' series) I have been getting $35 apiece—the originals to be returned. As Col. Fox probably has no great use for the originals, he would probably prefer to make similar arrangements than pay $50 and keep them. So please tell him that I will do them, in color, for $400 for the whole set (which is a trifle under the $35 fee), the originals to be returned to me, or for $550 if he desires to keep them. The pictures referred to (MacM. & Co.) are



Courtesy of D. Appleton–Century Co.

Heads of Owls, from the original in the possession of Frank M. Chapman, first reproduced in 'Handbook of Birds'

done in black and white, but the color is so much more interesting to work in that I'm willing not to raise the price; I have my present set about finished, and could begin at once on the other, at least by the time you could finish arrangements.

Before quoting this to Col. Fox, please write to me again and tell me what species he wants, and if you think we can combine species in every case that will be permissible so near together, and also if he expects both sexes of each species (or any). With the first reading of your letter this double entry proposition escaped my notice. If each plate means four figures, I may have to reconstruct my estimate. And what is your idea of the pictures as to setting? Do you think they should be formal plates—served up on clean paper, or with a dash of environment to lend local flavor to them? I ask a bunch of questions but it will facilitate things a lot if you answer them all at once. And there is still one more thing: please get Hoen & Co., or someone as good, and arrange with them beforehand that I am to correct all the proofs—with the originals, and to be satisfied with them before they are published. I think you will have no difficulty in arranging this, but it is a necessary precaution, as painful experience has shown me. And, by the way, do you know what Hoen charges for his best work per square inch? I've been asked the question and couldn't even guess at an answer.

In the matter of composite pictures, I am rather strongly averse to them unless the subjects permit it in their life—like chic-a-dees and nut'atches, and other sociable species. If they are portrayed formally, it is of course a different matter. When I see the list of species, I can tell how feasible the idea is.

Meantime, I continued negotiations with the Albany authorities. The list of twelve species to be figured was selected and forwarded to Fuertes who, under date of September 9, wrote as follows:

Dear Chapman:

Your list strikes me in a pleasant place, and I should be glad to commence at once. I am just packing off my MacMillan bundle, and am ready for the next on my waiting list.

It is hard for me to say just when I could finish the plates, but I think that unless the unforeseen happens I can safely say that the middle of November will more than suffice. I've been having a productive streak this summer, with a short interruption during August, and I feel pretty sure that I can put it through in one go. If so, it won't take as long; in any case I've given you the outside time limit. It's probable that I can finish them by the middle of October or the first of November.

The prices I quoted will be satisfactory under the conditions as you stated them: $400 for the lot if the originals are returned, $550 for the lot if the originals are kept by the Commission.

I don't care which firm does the work—one is as good as the other. I think, in final results, though, the Heliotype firm arrives quicker.

Fuertes now concentrated on the work in hand. He was an exceedingly rapid and productive worker when he could devote himself to his task but there were periods when for days he could not work effectively, but he usually responded to stimulation. On October 3 he wrote:

Dear Chapman:

With a most commendable spirit I have been working like a clock, and have got four of your pictures about done. I shall take a couple of days' rest from them—look them over in a fresh light and then give them a final go and send them on. They are the Pileated and Downy, Whip-poor-will and Nighthawk, Phoebe and Kingbird, Chic-a-dee and Nuthatch, and Redstart and Creeping Warbler. The careful mathematician may get five out of that, but I'll bet you only get four. Wait and see if you don't. The point is, that our friend Mr. Nelson Nicholls came to town from his uncle's farm the other day with a most superb fresh Whip-poor-will, and I was able

to do you a perfect beauty instead of a rather sad rag—for the ordinary Caprimulgine skin doesn't very closely resemble the real creature.

But he goes in with the Owls and other brown ones, and will come in with the next batch.

Honest, I've worked like a pup—in fact, a little too hard, and have had to give my eyes a little rest for a day or two. So I went to Elmira and married off a classmate, and came back this morning to pump out the mines again.

Just think: I've got your work almost half done. I'm anxious to hear from you about it, and see if you approve of the way they are done. They are not entirely uniform in treatment, and I think the variety is a charm rather than a disturbing element.

I'll send a batch along in a couple of days—maybe eight instead of four. Tell Hoen to buck up, and send the pictures and proofs along as fast as he can without rushing. Shall I send the bill piecemeal or wait until the end and send it in one big bite?

This was followed on October 8:

Dear Chapman:

I got your telegram at about two this afternoon, and packed up the seven pictures I had finished—(1) The Owls, (2) Pileated and Downy Woodpeckers, (3) Whip-poor-will and Night Hawk, (4) Phoebe and Kingbird, (5) Chic-a-dee and Nuthatch, (6) Redstart and Bl. and White Warbler, (7) Cedar Bird and Vireo. I have the one of the two hawks nearly done, and I should have finished it and sent it with the others probably tomorrow. I have the Sharp-shin killing an oriole.

Write and tell me if these pictures are as you like them. I've put quite a lot of study on them—and I think you'll allow I've been industrious.

To whom shall I make out the bill? I think I can finish so that you can have them all by the end of next week at the latest. . . Well, I must get back to work while my mental operators and miners are on speaking terms with each other.

On October 18, not quite a month and a half after the receipt of the commission, he writes:

Dear Chapman:

They're done!—or so near it that I shall probably send you the rest on Monday or Tuesday.

I've finished all but the Sapsucker and Cuckoo one, which for some reason went together with greater difficulty than any of the others.

Got the A. O. U. notice yesterday. Would you buck up and do a turn if you were in my place? I'd rather do a little informally, by way of reflected light from your Bahama talk.

The twelve plates were received shortly after the arrival of this letter and were acknowledged by a detailed criticism which did not, evidently, meet with Fuertes' approval, for on the date of the 24th he wrote:

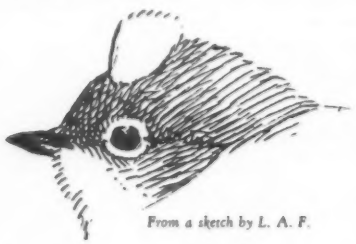
My dear Chapman:

I take my pen in hand to attempt to knock most of your criticisms in the head—with what success remains to be seen. First of all, I'm glad the woodcoo picture (or cuckpecker) is above suspicion. Now, holding well ahead, and pulling on the birds in the order in which they fly by, the hawk is our first victim. I thought long and hard as to whether to give B. B.=*Buteo borealis* a mouse or not, for the reason that if I did, it would wreck the balance and 'comfortableness' of the picture, and reduce it to a mere study of feeding time in the Zoo. It seems to me that with the careful discrimination you will make in the text it needn't be necessary to throw in a mouse. And there is no reason, since he has nothing in his claws, why he should be accused of bird-killing any more than of mouseicide. Also, he is not in a feeding attitude, but has one foot drawn up into his belly-feathers and is all hunched into calm repose. So please, Mr. Chapman, I'd really much prefer not to change it in that respect, unless you feel that it actually requires it: and then I shall feel that the picture is all knocked out. I don't think there's any danger of painting an oriole too bright—but am proud of the suspicion, as brilliancy

in high colors is a difficult matter in H_20 colors.

I'll go over the thrush picture and measure up again. They are a big-soft-eyed lot, those woods thrushes, and I had a strong feeling of a truthful look about them. I can probably slim down the Wood Thrush —although I hate to do it. I came near to letting both of them fall right out of existence into the needle-covered ground—it is surely permissible.

Your criticisms of the R. C. K. also are 'noted down and ruminated on'—but I wonder if you have never seen a Ruby-crown elevate the little red tuft, independently of the rest of his crown, and stand it out like a little torch—thus:



From a sketch by L. A. F.

It is concealed until he 'aims' to show it, and then he sticks it right up—out of the crown.

I'll turn the leaf in the tree-sparrow—and you may be right in the matter of size—length, at least, for I wondered, after it was drawn, if the tail didn't look long. He is at a slight angle, so it would be a little preshortened. The specimen I drew the Snow Bunting from came from Ithaca—Feb. 2, 1900. I can perhaps 'unbrown' him if you think it would be more typical.

There. Now to go back to the hawk, which doesn't seem settled yet: don't you think it would be possible to letter the plate text something like this:

(*Upper Fig.*) RED-TAILED HAWK
(type of mouse-eating Hawk)
(*Lower Fig.*) SHARP-SHINNED HAWK
(type of bird-killing Hawk)

I really hate to add anything more 'worse as deat' itself': advise me at once and I'll do the others first.

I'd love to go in with you on a Bahama Bird talk—I think it would be great sport and I have nothing else anyway.

Our differences of opinion in regard to the drawings were soon settled to our mutual satisfaction and the plates were sent to Colonel Fox at Albany. In acknowledging their receipt he said that with one exception they had been accepted with enthusiasm by the members of his department. He added, however, that he had a bird shark on his staff who did not approve of Fuertes' painting of "the Hawk flying over the Partridge." When, however, I called his attention to the fact that the picture was that of a Nighthawk coursing over a Whip-poor-will, he admitted the criticism was unfounded and the plate was accepted with the others. The lot of twelve was adequately engraved by Hoen & Company and appeared in the report of the Commission for 1902. The plates aroused so much enthusiasm that it was at once proposed to prepare a book on the birds of the State of New York with similar illustrations. Fuertes was of course asked to do them and I was honored with a request to write the text. Realizing my lack of preparation for a work of this kind, I suggested to the State that they offer the job to Elon Howard Eaton. This was done and there resulted Eaton's *Birds of New York*, in two volumes, the leading state bird report of its day and still a standard work. It contains 106 full-page colored plates by Fuertes of which three, No. 46, Red-tailed and Cooper's Hawk; No. 65, Nighthawk and Whip-poor-will; and No. 80, Tree Sparrow and Snowflake had already appeared in the conservation report

for 1902. The remaining 103 were made specially for the Eaton book.

Some years later Fuertes discovered that all these plates had been used in a work on the *Birds of America* (1917). When he called its publisher's attention to the fact that he still owned the originals, they promptly paid him for additional publication rights. This work is now issued by the Doubleday, Doran Company and our old friends, the Nighthawk and Whip-poor-will, still appear in it as Plate 65.

So much for the history of the first series of colored plates that Fuertes produced and that will doubtless have a wider circulation than any that he ever drew.

Rather than return to my letter files, I should like briefly to record here my recollection of a memorial meeting for Louis held at Cornell in the Memorial Room of Willard Straight Hall on October 30, 1927, two months after his death.

When President Farrand was informed that there was no tradition for such a tribute, he replied, "There is no tradition for Fuertes."

The Room's seating capacity of 500 was exceeded by filled aisles. Probably no audience of similar character had before assembled in Ithaca. Reflecting the breadth of Fuertes' friendships, every phase of city and college life was represented. Doubtless every one present knew him as 'Louie' and had come, not from a sense of duty, but from a genuine desire to join with others in expressing their love for a dear friend. The sense of having something in common animated the gathering. The sunlight of a clear Sunday afternoon, streaming through the great stained-glass windows, produced an atmosphere of cheerfulness unexpected on an occasion of this nature.

President Farrand happily put this feeling into words when he said: "This is not to be a sad meeting. We have come here not to mourn for Louis Fuertes but to rejoice that it was our privilege to know him." It was significant that everyone on the program had independently prepared himself to speak from that text.

What a contribution to a picture of Fuertes among his friends a record of the stories that were told that afternoon would make! Through the kindness of Romeyn Berry, then director of Cornell athletics, I give the one he told himself:

"Everyone who recalls Louis Fuertes associates with him the little metal 'Pipe of Pan' he always carried in the inside pocket of his coat. In his case it was standard equipment. He played tunes on it—imitated bird-notes—and with it I've often seen him draw a convention of Chickadees from miles around.

"Louis had another friend—a New York lawyer named John T. McGovern—who was just about as proficient as he was on the 'Pipe of Pan.' They used to play amusing duets together on the little gadgets and sometimes down at Beach Haven they'd play duets for hours at a time.

"A long time ago when McGovern and I had law offices to-

gether in downtown New York we took the subway one day to go to the Appellate Division Courthouse on Madison Square. We got off at Twenty-third Street, climbed the stairs, emerged at the street level and had a head-on collision with Louis Fuertes who was trying to enter the subway by the Exit.

"Neither of us had seen Louis Fuertes for over a year at the time. Yet not a word was spoken; not a glance of recognition exchanged. Breast to breast and with blank, expressionless faces Louis and McGovern reached simultaneously for their innermost pockets, produced their pipes and burst into the strains of 'La Paloma' rendered with variations, trills and the closest of close harmony.

"Immediately a crowd encircled the two minstrels and traffic began to clog up at the corner of Twenty-third Street and Fourth Avenue. 'La Paloma' was finished and 'Hiawatha' began. The incident seemed to be turning into a long musical session. I began to get pretty nervous because (1) McGovern and I were overdue at the Appellate Division; (2) the one crime that could not be laughed off in New York at that time was collecting a crowd and blocking traffic; (3) a large, dangerous policeman, then engaged with a few tangled trucks at the crossroads, was beginning to cast menacing looks in the direction of the crowd and the music.

"As 'Hiawatha' blended imperceptibly into 'The Bohemian Girl,' the policeman started for us. At the same time I merged with the crowd, giving a fine imitation of a man who was entirely unacquainted with either Mr. Fuertes or Mr. McGovern—had never seen them before in his life.

"The policeman pushed roughly through the circle of music-lovers, dashing taxpayers to one side or the other (neither Louis nor McGovern paying the slightest attention to his approach) until he had attained a good ring-side position. He then stood there with his fists on his hips, glaring with dark menace on the artists, who by this time were palpably losing some of their aplomb.

"He let them wobble to the conclusion of the number and then growled truculently, 'Say—you two! Can you do the tenor solo from "Rigoletto" on them things? You know the one that goes "*ta—ta—ta—ta—te—da; ta—ta—ta—ta—te—da*"' (indicating the general swing of 'Donna e mobile').

"Louis and McGovern rendered the request number, bowed to the policeman, put their pipes back in their pockets, bowed to each other and separated. Neither had seen the other for a year, neither expected to see the other for another year, neither had uttered a word to the other throughout the entire episode as narrated."

Wintering Tree Swallows at Jones Beach Fall and Winter of 1937 and 1938

By John J. Elliott

ON THE west bank of the pond in the Jones Beach Bird Sanctuary, Long Island, N. Y., where the bordering marsh gives way to higher ground, is a large bed of phragmites; this, in turn, is bordered to the north by a mixed tangle, consisting mainly of high bayberry bushes (*Myrica*), interspersed with an occasional cedar; sheltering this from the northwest winds is a height of land, a long windrow of dune formation. At dusk, early this winter, I counted twenty-eight Tree Swallows flying low and silently in a long straggling flock along the pond from the east, and watched them disappear for the night into the border of this bed of reeds.

I could not help comparing this apparently hopeless little band of birds wintering through, perhaps, for the first time on record in New York State, with the birds I encountered in early summer. They, in a defensive mood, dashed downward at me as I was walking in this locality, and as they shot upward, a few feet from my head, with a quick snapping of their bills, I found I was entirely unwanted in their immediate vicinity. Once again, on September 12, a huge migrant flock of thousands covered the area with resting and flying birds, and everywhere myriads scattered over the surrounding marshes.

I want to relate an incident that shows the Tree Swallow's quick conception of danger and versatile nature which was to carry it on through many dangers and problems during the long winter. A Pigeon Hawk appeared along the west fringe of the flock, as they rested and maneuvered through the sky in an apparently disconnected fashion, when suddenly, with a great rush of wings, audible for a hundred yards or more, the birds flew eastward, and in a minute not a Swallow was to be seen anywhere on the horizon. How thousands of birds got into such rapid motion and removed themselves so completely from danger was a marvelous procedure, and could only be executed by Swallows, those creatures of the sky whose every motion is one of symmetrical grace and matchless form. Another incident, on October 17, showed the spirit of the bird, when a Tree Swallow attacked a Duck Hawk over the pond, and made that flying terror jerk slightly to one side each time the Swallow dived, high on the head from the rear. After five or six such attacks the Hawk gained speed and left the Swallow. Keeping in contact, see-

ing such interesting happenings, and noticing the birds lingering late into the fall, I decided to give this flock, which to all appearances was going to winter, as much of my time as possible, and to learn of their winter habits and peculiarities. To this end I made 78 trips and spent 131½ hours. The frequent trips had the advantage of permitting me to observe the actions of the birds in many types of weather. I found cold rains, windy and snowy weather, extremely discouraging for flying birds, and after hours of watching, saw not a bird in the air. During these periods they remained in their sheltered situations, chiefly north of the pond, subsisting principally on bayberries. Cloudy days, especially if cold, also discouraged them to a certain extent from taking the air. In fact, I found that, generally, the brighter the sun, the more I saw of flying birds, and the warmer the sun and surrounding air, the higher their flight, both proportionately, except during windy days.

At no time did they use telephone wires or any high exposed perch, as in summer; no long flights high in the upper air, no chasing Hawks, no extended flights to escape the quartering Marsh Hawk (which I found killed and ate a number in the large migrant flock mentioned above). Energy must be spent for food, and food alone, till the warm days of March and April raise their spirits, as they increase their food-supply. Before, these little winged creatures, whose every movement in the air is enhanced with beauty and grace, were subject to the caprices of the wind. Now, like little grounded planes, they spent much of their time close to the surface, and got the greater part of their food on or near the earth, while their southernmost relations were catching insects on the Gulf of Mexico, or in the Tropics of Cuba. My heart went out to them as I watched their diminutive pointed wings swing them into the wintery sunlight, in December and January, and back again to their perches on the low stubs. They seemed too discouraged to continue on days when, exposed from my point of observation, the wind bit fiercely at my ears, and gloved fingers grew numb holding the binoculars. Every few minutes the birds flew out and tried the air but knew it was of no avail. The middle of December was cold for about a week, also the second and third weeks in January, when there were three to four inches of snow. The thermometer dropped to five degrees above zero and ice-breakers were operating in Great South Bay.

Not unusual was it to see a Snowy Owl perched on a frozen muskrat house, or a Rough-legged Hawk hovering, Kingfisher-fashion, over the snowy marshes, and on the same scene several Tree Swallows, lending a touch of summer. On the east end of the pond on January 2, just before sundown, the birds were flying 6 inches to a foot above the water, in serried ranks. At a certain point they wheeled and started over the same course again and again, always inside this limited area; whatever insects were about were in this limited area, and the birds knew it. As darkness came on they flew to

Photo by John J. Elliott

"A little bite here and there seems to suffice"

their favorite roosting-place at the west end of the pond.

On the morning of January 10 the pond was covered with ice, and the thermometer read twenty above; there was no wind. The birds were hungry, and I saw to what means they will go to obtain food. They flew over the ice and frequently lit on it, also hovering over objects imbedded in it, appearing puzzled that they could see, but not obtain them. One bird, finding something apparently edible, had to defend itself from several hungry companions as they hovered over it. This was one of the rare occasions when I have found birds that take most of their food in flight, showing a collective interest in a grounded object. Another rolled the quill end of a feather in its bill, perhaps for a trace of nourishment. After the birds searched over the pond, they again alighted along a line of refuse left by the Ducks, but that was the only day I ever saw Swallows on ice. Their flight in the periods of severe cold is more suggestive of the Rough-winged Swallow, slow and less erratic than usual, with sluggish wing-movements.

They are given to much resting in sunny sheltered places, in little huddled groups of four or five birds each, and resort to low broken stubs of bayberry bushes, strong blackberry canes, squatting on the sand, or on boards imbedded in the sand. They are usually silent but on occasion utter a cheery, reedy, double-noted twitter when sunning themselves and in moderate weather.

In the less severe weather they also show resentment to each other when in a close group, if one attempts to crowd in, the perched bird snapping its bill loudly and in rapid succession. I was very intimate with these little birds in

January on these occasions, and photographed them while I stood on the frozen pond. I tried hard for a close-up, but the birds seemed to regard the near-by camera with suspicion, and circumvented it. Approaching the birds on foot, as the ice protested noisily at each step (where the sun had weakened it near the bank), I was able to advance to about six feet from the sleepy mites, and could see them dozing in the warm sunlight, protected by the high banks. When I had come too near, they flew a few feet and lit again. They presented their backs to the sun, and some opened their wings slightly, thereby presenting a greater surface to the sun's rays and, holding their bodies at right angles, they received the full benefit of it.

On January 28 I found the flock of twenty-eight birds intact. They were all there that morning, not a bird missing, from the early winter. Contrary to what one would imagine, the complete flock was together on comparatively few occasions during the day, and as the first part of February came with milder weather, their habits changed. Separating somewhat, one band of half a dozen birds took a liking to the ocean front and used the space between the causeway and the ocean for their feeding-grounds. In cold and cloudy spells the birds made no attempt to flock together for their morning and evening meals, but occasionally a few stragglers would appear toward nightfall and drift into the reeds on the shore of the pond.

I made a startling discovery regarding their food. The birds in early winter used low perches while sunning themselves and, watching closely, I was able to collect their excrement. Mr. Denslow, of the Children's Museum, Brooklyn, reported the contents as full of the skeletons of small crustaceans, but did not recognize the species. Analysis of the fecal material by the U. S. Biological Survey showed that crustacean material (*Orchestia platensis*) formed the bulk of the food, along with water-boatmen, spiders, bulrush, sedge, bayberry and smartweed seeds, and fragments of rose thorns. I can find no record of these articles of food in the Tree Swallows' diet. By watching carefully I found the birds obtained these near the ocean front. They were extremely adept at locating edible matter if it were exposed to view. The food-supply diminished as the winter advanced, and the excellent crop of bayberries, which kept many birds north, was their standby. The many intervening warm days, however, gave them an occasional supply of winged insects, as on February 2, when little black flies abounded, and on February 14, when the Swallows were making side sallies in mid-air, and snapping their bills on their winged prey.

Their spirits rose, and on February 4, with a touch of spring in the air, three Catbirds were calling, Fox Sparrows uttered their sprightly whistle from the thickets, Song and White-throated Sparrows added their melodies, and a Tree Swallow flew across the sky, calling a cheery twitter till it was out of sight.

Except for a terrific northwest wind the last of February, sending

the glass to ten degrees, the birds encountered little difficulty the rest of the winter. On cold days they fed in the bayberry bushes. Hovering and dropping lightly, they would partly denude a berry. Similar to their search in the air, a little bite here and there seems to suffice. On these occasions they are rather shy; a close approach, and away they go. Sometimes a loud twitter from a flying bird gives alarm.

Mid-March saw the birds greatly changed. Mornings and evenings they collected regularly, in good weather, and after the evening meal the flock, now comprising nineteen birds, used the same tactics as observed by the great Audubon. He describes the birds, in Louisiana, as rising from the lakes to a great height and swooping down to their roosts, while wintering there. On my native Long Island I had the pleasure of witnessing the birds in late March rise from the pond, a few at a time, climb into the upper air, and swirl in great circles in the evening sky until all were in the flock. This took about twenty minutes as the birds joined in small groups, with intervals between. Then from a height of nearly 200 feet they swooped down to their roosting-place north of the pond. In the air they reminded me of a flock of swirling mosquitoes on a summer evening. Their morning actions were very interesting, although different from those of the Louisiana birds, which were described as flying low. The first bird in the air rose to about 150 feet, twittering loudly as he circled over the roosting-grounds. When the

Photo by H. H. Pittman

Tree Swallow

ascending birds rose from the bushes below, the upper bird descended rapidly and met them, then all rising, they went off high in the sky in an aërial chase through the early dawn. What different actions from midwinter's! The Tree Swallow is an adaptable bird, accepting conditions as they come and adjusting itself to suit its environment. Not knowing what interesting antics to expect next, I experienced many hours of enjoyment, not to mention

apprehension, for the safety of the birds. A prolonged icestorm, I believe, would have terminated their existence.

Why did Tree Swallows stay this past winter? That is hard to answer. I believe these birds lingered, as in several other locations (see 1937 Christmas Census, BIRD-LORE), during the mild fall weather here, with plenty of insects and a bumper crop of bayberries at the Sanctuary. Finding things to their liking, they stayed until the migrants had left, then the migration urge ceased and they remained.

Now, on March 28, I will conclude this report. This morning there are 23 birds, 4 of which I believe are new arrivals from farther south. Late March often brings them. I could find only 19 birds before this week. The flock is clinging to a wire netting erected for banding purposes at the Sanctuary. Attached to the wire are remnants of suet that I fastened there in midwinter. Much of it disappeared, but I believe the Swallows took none of it.

A big male (I assume) is chattering loudly on top of a man-made bird-box by the water's edge. Another bird is singing a musical, bubbling warble, part of which resembles the liquid notes of the Cowbird, but is softer. (I find no reference to this song in the ornithological works, but it is entirely unlike the common song, which is drier, harsher, and, on occasion, louder.) I step out into the open beneath, and several birds lunge at me, as in the previous summer. The cycle is almost complete.

Feeding high in the warm sunlight; checking themselves in midair, sallying sideways at right angles, and capturing insects in January and February; taking advantage of the warm passages of air on the leeward side of every windrow and sand dune, forestalling Mother Nature in her every whim and caprice; eating bayberries in a half-bashful way, as if ashamed of such fare, and only of necessity—the Tree Swallow is indeed the little gleaner of the winter sunshine, an example of courage to us all.

The Cover

The Old-squaw, used as the cover for this issue of BIRD-LORE, is reproduced through the courtesy of Mr. Samuel C. Harriot. It is the work of Mr. Sven C. Raven, who, incidental to his lecturing, has formed many Junior Audubon Clubs. Most of Mr. Raven's work has been concerned primarily with anatomical studies of birds.

Water—Life-Blood of the Earth

By **Roger T. Peterson**

PART II

SOIL, without its humus and a cover of litter, clogs up easily when it rains, the teacher explained. The litter and grass hold back the raindrops a bit and give them a better chance to be absorbed slowly by the soil. Without these, the rain wets the surface and seals it, and then rushes off, taking surface soil with it. The greater this run-off is, the greater the dangers are that follow. In some places it is said that run-off, which should take three months, is swept down to the sea in one month.

The journey of many a raindrop is far different today than it was when the land was unspoiled. Instead of being checked by the grass and leaves, and allowed to sink slowly into the soil to maintain the underground water-supply, the drop is joined by an army of others and they all trickle into the nearest small rivulet, which perhaps has started cutting its banks and wearing a deep gully. The greater the rush of water, the more difficult it is for plant-roots to hold the soil against the cutting force. Further down the line, where the beaver-pond used to be, there is nothing to stop the rushing progress, for the beavers in that area have been trapped out long ago. A score of little streams join the main body of water as it makes its way toward the sea. The swamplands, which offered pockets for the surplus water to retreat into, have been drained, so by the time the now-swollen, muddy creek reaches the big river it finds a great flood. The high waters from numerous smaller creeks have arrived at the same place at the same time. Houses in the lowlands are swept away, and lives lost. When the water recedes, a week or two later, a heavy coating of mud and silt covers the fields where crops had been planted.

Too Little Water

Too much water can do a great deal of damage, but so can too little. These same streams that the raindrop traversed in its helter-skelter scramble to the ocean often present a vastly different aspect late in the summer. The beds of the little streams are quite dry, for no water has been held back. Not receiving its proper supply, the underground water-table has been lowered to such an extent that it no longer feeds a sufficient amount of water into the springs and streams to tide them through the hotter months. As a result of this lowered underground water-level, soil in

Photo by Soil Conservation Service

RUSHING OFF. The greater the rush of water, the more difficult it is for plant roots to hold the soil against the cutting force

Photo by Soil Conservation Service

CUTTING THE BANKS. Soon the road will go, too

many places has become quite powdery, not fit for many plants to grow in. Dry soil means sick and stunted plant life, which, in turn, results in scant animal life—the insects, mammals, birds, and even man, too, for he also depends on the earth for his living. He will always be dependent on it even though he sustain his life with chemically made pills and tablets.

Wild Life Needs Water

Geese, Ducks, and other birds live on the plants and smaller animals that grow in the water of swamps, marshes, streams, and ponds. When the water-balance is upset, many of these plants and animals die. This may be one of the reasons why Ducks and Geese have recently been at such a low level in our country.

The teacher asked what else would be affected by these unnatural water conditions. Fish would, of course, because they, too, feed on the plant and animal life in the water, and the birds, like the Kingfisher and the Great Blue Heron which eat fish, would become scarcer, too. Another, and even greater menace than silt from erosion, to life in the rivers, is pollution from cities and towns. The teacher said, however, that the class would not study pollution quite yet, as it was a somewhat different problem.

The class began to realize that nearly everything in nature is interdependent. Nothing can live by itself. Animals can't live without the soil, nor can the soil thrive without animals, and without water the soil cannot produce plant life nor support animal life.

A Movie

The teacher sent to the Motion Picture Division of the U. S. Department of Agriculture, Washington, D. C., for a 16 mm. picture with sound, called *Muddy Waters*.* This was shown in the assembly hall, for, fortunately, this school was equipped to run sound pictures.

The film told the story of soil-erosion by water and some of the things that the Soil Conservation Service is doing about it. "This bureau of the United States Department of Agriculture is like a doctor to this country of ours," the teacher explained, "a doctor who patiently cures the sicknesses of the land by teaching farmers proper plowing and planting methods, by planting trees and shrubs on eroded hillsides, and by building dams to hold back run-off waters and stop them from washing away the banks of gullies and streams. In some places they have used beavers to build these dams as these animals are natural dam-builders."

'An ounce of prevention is worth a pound of cure,' is an adage that applies to land as well as man. It takes only a short while to destroy an inch of top-soil, but it might take centuries to replace it. The class had many ideas as to ways of preventing such waste. Of course, not everybody understood these things as well as they did, but they

**The River*, in 16 mm. sound, is distributed by the National Emergency Council, Commercial National Bank Bldg., Washington, D. C.

Photo by Soil Conservation Service

FLOOD. The high waters from numerous small creeks have arrived at the same place at the same time

Photo by Soil Conservation Service

SILT. When the water recedes, a heavy coating of mud and silt covers the fields where crops had been planted

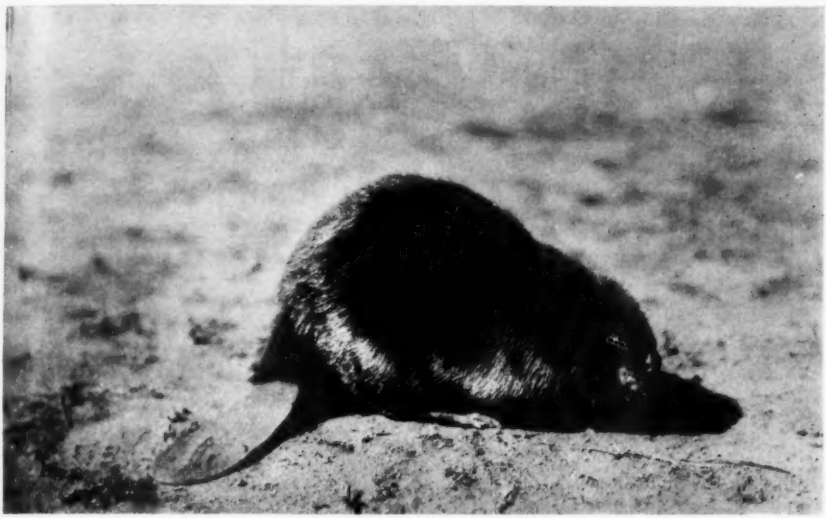


Photo by Department of Interior, Ottawa, Canada

BEAVER. This mammal practiced land and water conservation long before man ever thought about it

vowed that if they ever owned a piece of land of their own, they would treat it properly.

The Beaver Is a Remarkable Animal

The beaver practiced land and water conservation long before man ever thought about it. This large, flat-tailed rodent is not only a master woodsman, but stores water, thus evening up the flow and preventing floods and droughts and, in time, building up many rich meadows.

The teacher did not have time to go into great detail about the activities of beavers but said that at a later date the class would make a study of them. She asked whether any of the boys had ever made a swimming-hole. It turned out that nearly every one of them had helped make a swimming-hole at some time or other. The usual method was to build a small dam across a stream with rocks, branches, and brush, and fill the cracks with sod and mud. The resulting pond made an excellent pool if the dam was built properly.

Beavers build ponds in much the same way, only they use their teeth instead of a hatchet to cut down small saplings and branches. Near the center of a pond a beaver-house is built. The pond continues to grow until sometimes it covers several acres. At first, many trees that are standing in the flooded area die, and it would seem to many people that it is a pity that this should happen—but wait! After several years the beavers desert the pond, and the dam falls to pieces. When the waters go down, a rich black soil is exposed. This is soil that would have washed down into the big streams and been lost except

for the dam that held it back. In due time a growth of sedges, and later, bushes, covers the bed where the pond used to be. Deer and other animals come to feed there and bird life is abundant. The stream is about the same size it was before the beavers came but instead of rushing through hastily in the spring and becoming dry in the summer, the water meanders slowly across the beaver meadow, held back by the rich plant growth.

At the next meeting of the club, the September, 1938, issue of *Natural History* magazine was brought in from the library, and the story of the beaver by William Carr, on page 100, was read and discussed. Parts of this fine article also appeared in the October, 1938, issue of the *Readers Digest*. Another excellent article on beavers was found in the January, 1938, issue of *Soil Conservation*, the magazine of the Soil Conservation Service.

Conservation had been a vague term to most of the club members, but now they were beginning to understand it. They were beginning to realize that land and water conservation also resulted in the preservation of wild life. Everyone was quite fascinated, and eager to go on to a study of forests, marshes, and grasslands.

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Hawk and Owl Banding Project

For the third consecutive season, Hawks and Owls will be banded by the Persecuted Species Department of the Association in coöperation with the Biological Survey. Active field students are often in a position to band nestling Hawks and Owls, so arrangements have been made whereby Richard H. Pough of the Association staff can issue one or more bands to anyone in a position to band these particular birds. Young Crows are also being banded, as both the Association and the Survey are involved in intensive studies of this bird.

To date, 305 Hawks and 81 Owls are traveling around wearing the regulation Government aluminum bands, the returns from which will eventually tell an interesting story of the birds' movements. The fate of 28 of these birds is already known. Among the returns of special interest is one from a young Marsh Hawk that left its nest near Minneapolis, Minn., and traveled 1600 miles southeast to Havana, Cuba, where it was shot seven months from the date of banding.

If you ever have a chance to get at any young Hawks, Owls or Crows, send for some bands. They won't mind wearing them and their parents don't seem to mind your putting them on—except maybe at the time. The parents have never shown any tendency to desert the banded young.—R. H. P.

Why Do Birds Behave as They Do?

By **N. Tinbergen**

Lector in Experimental Biology, University of Leyden

PART II

ONE of the most remarkable aspects of the bird's reactions to its environment is the fact that for a certain reaction only a few elements in the surrounding conditions have influence, though the sense organs may be impinged on by many other elements. A very striking instance is reported by the German psychologist, Lorenz. On the roof of his house a colony of Jackdaws (a small Crow) breeds. The birds are free-flying, but tame. If a predator takes a Jackdaw, the bird that happens to see it utters a 'danger-cry,' and at this signal all members of the group hurry to the Daw and join in a communal attack. Although a Jackdaw has excellent eyes and, in fact, is capable of recognizing each of its companions individually (a surprising faculty!), the alarm-call is a reaction to only a few elements of the predator situation. Lorenz, when carrying a black bathing-suit in his hand, evoked the same reaction. This and other accidental experiments proved that 'somebody carrying something black' was all that was necessary to give a response.

A bird's reactions to a bird of prey offers another occasion when birds react by flight, hiding, or similar predator-avoiding reactions to everything that is swiftly moving along the sky. Lorenz and I once studied this in a series of experiments, by pulling cardboard decoys along a hundred-yard rope tied between two high trees, and watching the reactions of birds underneath. Some ducklings, which were reared by man and never had had any experience with birds of prey, showed intense flight reactions at many differently shaped models, such as circles and triangles. Other species display their 'predator-reactions' (crouching, running for shelter, threatening) to every birdlike form moving along the sky, provided it has a short neck! The best experiment to prove this was the following: we pulled the bird model, shown in fig. 5, several times in both directions, now the long neck in front, the short appendix being the 'tail,' now the short appendix in front functioning as a head, the long appendix being tail. In the first

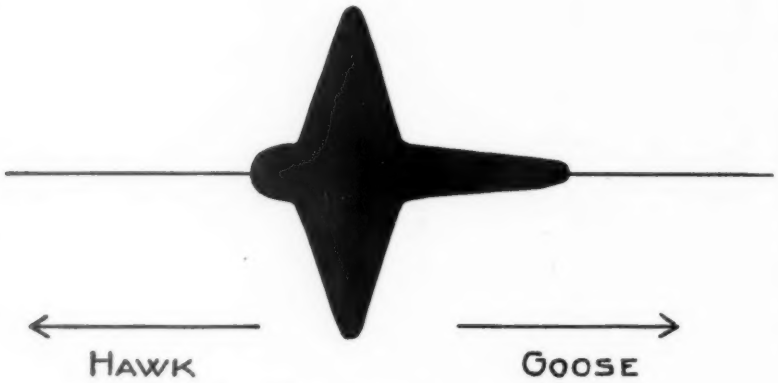

Fig. 5. "We pulled the bird model . . . in both directions"

case it was a Goose, in the other case a bird of prey. Our young Turkeys reacted accordingly; they showed no fear of the 'Goose,' but displayed intensive flight reactions to the 'Hawk.' These cases, again, show how unspecific the sense impressions may be that release a given reaction. Yet we know that several of these species have such excellent powers of recognition that they are capable of making much better distinctions among individual companions than we are.

It is clear that such vague and unspecific reactions are harmless to the species, as long as they fit the right situation in most cases. The external conditions in a Jackdaw colony *are* such that 'somebody carrying something black' will almost always be a predator carrying a Jackdaw. A curious biologist happening to walk by, carrying a black thing to deceive the birds, certainly is a rare phenomenon.

Lack of space makes it impossible to give more instances, but these suffice to show that birds react to only part of the conditions *we* see in their surroundings. Much we see happening around the bird does not influence it at all!

Now, Nature has made animals capable of coping with the environment in two fundamentally different ways. We men are able continuously to change our activities by utilizing individual experience. Other animals, such as many insects, are unable to do so to a great degree; their reactions are fixed from birth, just as the shape of their wings and other bodily structures are fixed. Although an animal devoid of 'innate reactions,' and one devoid of learning capacity, does not exist, there are wide differences in the degree of development of these two elements in different species. Most birds, unlike the higher mammals, have a relatively great number of innately fixed reactions. It should be made clear that not only the behavior pattern is inborn, but

also its connection, through the nervous system, with the special sense-impressions that release the behavior pattern. Let us avoid labeling this fact with the word 'instinct,' for the use of this word might satisfy us and thus end our search for a solution of the problem.

Innate behavior patterns and innate responses to external situations can be studied by every bird-lover who has an opportunity to rear a young bird by hand. The careful observer will be astonished to see that, for example, a hand-raised Shrike will suddenly fly without ever having seen his foster father doing so; will react intensively to a soaring bird of prey; and will fly down on a bumblebee and kill it, even neatly impaling it on the spine of a plant, or barbed wire!

The large number of innate behavior elements does not mean that birds do not learn. As a matter of fact, the innate coupling between sense-impression and reaction is often thoroughly changed by individual experience. Colonial Terns and Gulls learn to brood and feed only their own young a few days after hatching. While they at first feed every young bird we may put in the nest, they do not feed strange young, and may even kill them when they have learned to recognize their own young by appearance or voice.

Although an Oyster-catcher innately reacts to the danger-call of the species, a pair that breeds in a Herring Gull colony soon learns to react to the Gulls' alarm cries, too.

It has now been proved by experiments that many song-birds have to learn individually not to catch wasps, bees, and bumblebees. The bad taste of these animals (rather than their stings) causes the birds to be cautious after only one or two experiences. 'Territorial' birds, and other species that live in a limited space, learn to confine special reactions to special places; they know exactly where a special kind of food may be found, where to bathe, where to sleep, where to incubate, etc.

It is a highly fascinating work to trace these different reactions, their connections with the environment, and their modification by individual experience in any one species. Simple observations of the wild bird, combined with hand-raising of one or more young, will reveal new facts of scientific value even in the common nest-bird in your yard!

Do these relatively simple principles account for the enormous, perplexing diversity of a bird's movements? Does not, for instance, a bird show, apart from innate and learned movements, real insight? This raises a very difficult question, for nobody ever has defined what the term 'insight' does mean. Let us consider it a little more.

We certainly are far from having a satisfactory analysis of bird behavior. Even our 'innate' and 'learned responses' are still such tentative, such incomplete concepts, that it is obvious the words mark only the first step of our progress toward understanding. Their value is, however, that they smooth the path for our future research, because they are relatively well-defined concepts.

Photo by Jan P. Strijbos

Fig. 6. European Jackdaw

Such cannot be said of the term 'insight.' Insight indicates a subjective process, a state of mind, and it is, therefore, worthless for analytical research. We cannot describe it but merely give possible examples. Moreover, the term insight has been applied to *various different processes*. An action that shows a marked ability to locate objects (spatial orientation) in the visual field is often taken as indicative of 'insight.' I once saw a peculiar activity in an adult male Lapwing. A cat was walking in the meadow where this Lapwing and his fledged young were feeding. The young, as well as the adult, took wing and hovered around the cat. The young birds soon settled, some of them rather close to the cat. The father's reactions to this situation consisted of repeatedly swooping down to those young

that were nearest to the cat. He continued to do so till the young flew off. While the cat thus slowly walked down the meadow, the Lapwing over and over again drove its young away from the mammal.

We may call this evidence of 'insight.' But if we do, we must also call the behavior of the Gull that returns to his territory after fishing, and feeds his young, insight; and that of the Robin, which digs for an invisible prey, even more so. In fact, every spatially oriented reaction would show insight, and thus our word would explain nothing, and remain mere dead weight.

The faculty of 'making a detour,' when direct access to some incentive (such as food) is blocked, is often taken as an indication of 'insight,' whereas an ape, confronted by a fence that blocks its way to food, walks around the end of the fence more readily than would a chick in the same predicament, yet the chick can do it to a certain degree. Again our word 'insight' would describe nothing more than a more or less complicated form of spatial orientation; and description and analysis of the mechanism of this type of orientation certainly carries us farther than merely labeling it 'insight.'

Another criterion of 'insight' is the ability to *learn* very quickly, and to change behavior after one experience only. The inadequacy of the term again strikes us when we take a 'simple' case of quick learning. A newly hatched Grey-lag Goose does not 'know' what its parents look like. It only knows that they are moving things. During the first few minutes of its life it *learns* that those moving things it saw first (its parents) have to be followed and be listened to. When a gosling hatches in the incubator, and a man picks it up to carry it to a Goose family, the few minutes' handling suffice to 'spoil' the child entirely. When placed among the young of the Goose family it will not accept the Geese as parents, but will make the most vigorous efforts to follow the experimenter. The experience of the first few minutes out of the egg caused this peculiar behavior. In order to keep the chick from being 'humanized' one has to bury it in one's pocket at once, after opening the incubator, and then run down to the Geese and put it among the goslings.

We might apply the term insight to the gosling because it learned in an amazingly short time. But again we should kill our problem by replacing a good description by a worthless label.

Instead of arbitrarily applying the word insight to certain cases of fast learning or complicated spatial perception, we do better to analyze those cases by objective methods. Thus, such complicated perception processes as 'counting,' 'form-perception,' 'relative choice,' 'absolute choice,' etc., have already been studied by such methods, and these studies have revealed many important relations.

Returning to our starting-point, where I showed that the 'knowledge' of a goal of behavior certainly does not cause it, the question arises: does, then, behavior

have no function? It certainly has. The point is, however, that the function is not understood by the acting bird. Nevertheless, the action may have a very definite function. We can judge the function of the behavior by the effect it has. In many instances this is obvious enough. The adult Thrush's feeding behavior has the function of providing the young with food. The Common Tern's alarm-note has the function of calling other Terns to join in an attack. We saw that the function of 'gaping' in young song-birds is to urge the parent to put the food in their throats.

A problem arises whenever the function of behavior is not at once understood. For many years ornithologists have been disputing about the function of spring fighting in birds, about song, about many courtship displays. The effect—the result—of these actions is often very difficult to detect.

I should like to mention some striking examples in order to call attention to the enormous and fascinating variety of problems that is found in this field. Many birds, especially those that are 'protectively' colored, remain motionless when in danger. This makes them difficult to detect—for man. But is this also true of the birds' natural predators? Several facts influence our answer. We see, for instance, that 'freezing' is shown especially by birds that are colored like the earth or grass. We know that our inability to see them is the result of the fact that we cannot isolate parts of our visual field from the rest, when these parts do not arise as an odd figure, conspicuous by contrast or outline, against the background. This peculiarity of our visual processes, we know now, is not peculiar to man alone, but to other visually oriented animals as well. The visual feeders among the predators, therefore, are equally incapable of finding a camouflaged motionless quarry. Furthermore, in some instances, such as in the Bankiva fowl, the bird only hides from the visually hunting birds of prey, and flies to the tree-tops when a mammal (which would detect a hiding bird by smell) approaches. Again, experiments of various kinds show directly that many preying birds do find protectively colored prey much less easily than those that are colored differently than the ground. Such diversity of arguments has to be considered in every problem in the function of behavior (and of structure).

Many waders, and also Gulls and Ducks, make peculiar trotting movements on grasslands, on wet beaches, or on mud flats. The movements are different for the different species. After trampling, they carefully inspect the ground and pick up whatever animal might emerge from the ground. These actions certainly serve to bring up special kinds of worms and other animals, and an accurate study of those movements and their effects on different lower animals in the soil would certainly reveal an intricate pattern of relationships.

I could carry this list of problems on infinitely. Almost invariably a

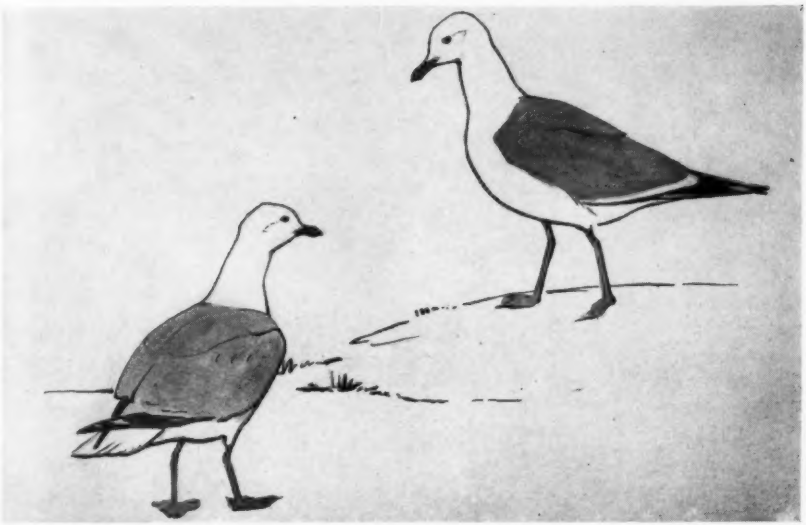

Fig. 7. "A male Herring Gull . . . reacts to an approaching stranger Gull . . ."

problem will appear to be unsolved, and an extensive program of most fascinating research lies before us. Before leaving the subject, we must consider one special kind of function of behavior. The most specialized forms of behavior are found when social relationships are studied. Many movements serve as a primitive kind of language and, while not intended by the bird that displays them to be communicative, have profound influence on a companion's behavior. The highly specialized song of a Song Sparrow has an attracting influence on the female. The song is so specialized that no females of other species are attracted by it, nor does the female Song Sparrow go to a singing male of any other species.

A male Herring Gull, when on its territory, reacts to an approaching stranger Gull, by assuming a peculiar attitude: it stretches its neck, but at the same time points its head down (fig. 7). This unique movement functions as a threat, and the stranger reacts by flight.

A most interesting fact about these 'signal' movements is that they often display conspicuously colored parts of the body. These bodily 'signals' may have the same functions as the movements, and serve as a form of language. This is so general a rule that one is certainly justified in assuming such a function for every conspicuous structure of any bird, using that assumption as a working hypothesis for research. The tail and wing patterns of shore-birds, so useful for the bird watcher, certainly do not serve primarily to facilitate his identification, but to facilitate species recognition and one-species aggregation of the birds. The same function is served by the wing-marks of water-fowl.

These problems as to the social functions of conspicuous structures urgently need investigation. The North American birds are as a rule much more brilliantly colored than our European birds. They certainly possess many signal structures. The North American bird student is in a unique situation for studying the function of signals. The precise function of the Red-wing's epaulets, of the Redstart's tail pattern, etc., is still to be found. To evoke the readers' interest in active coöperation in this kind of work has been the primary aim of this paper.

Displaying Bitterns

In our Haddam meadows, by the Connecticut River, one often hears the booming love-notes of the American Bittern—like the gurgling of a pump or the driving of a stake in the soft mud. Thoreau says its note sounds as if it had taken the job of extending all the fences up the river to keep the cows from straying. But never, in nearly forty years of a bowing acquaintance with the Bitterns, have I had an experience like this which I wish to tell.

We stopped our car this side of the causeway, hoping to see the globular nest of the Long-billed Marsh Wren. No Wrens were to be found (they were there two weeks later). But wait, what was that in the rushes at our right? Could it be a great American Bittern? Its plumage was so fluffed out that it appeared twice its usual size, and about its shoulders there was a cape of pure white fluffy feathers; the large white plumes were erect and spread on each side of the back, apparently meeting in a wide collar.

We watched the strange spectacle for nearly ten minutes, then our attention was directed elsewhere; as we looked again the white had disappeared as if by magic, entirely concealed beneath the wings. For a time we looked in vain for a reason for all this full-dress display; finally, sharp eyes espied another Bittern a short distance away, standing motionless with head and neck outstretched, the bill pointing skyward, its colors so harmonizing with the surrounding marsh growth that we could but believe that it was 'only a stick' after all.

But the exhibition was not yet concluded; from the opposite side of the road advanced another Bittern, with stately walk, till he reached the center of the road just ahead of our car. There it stood without moving, with outstretched neck and head, paying not the slightest attention to us. Though we drove the car still closer, the birds were apparently oblivious to our presence.

After a while Bittern No. 1 advanced into the road and chased the newcomer to within 10 feet of our car; then both rose into the air and each drew its folded neck in between its shoulders; the long legs, as rudders, awkwardly trailed behind them. With slow strokes of broad wings they pursued each other in immense circles, finally disappearing from sight. After waiting in vain—perhaps for their return—the undemonstrative Bittern who still stood as a reed, also flew away.

From the amazing display of nuptial finery, the apparent antagonism of the two birds, and the placidity of the third party in the drama, we wondered if we had been the fortunate spectators of a courtship of two rival denizens of the marsh.

But, alas, that is mere idle speculation, and we shall never know!—Mary Hazen Arnold, *Haddam, Conn.*

What Eats What?

By **Frances Hamerstrom**

THERE are many things which amateur naturists have not explored. Mr. Joseph Hickey's *The Amateur Ornithologist and His Bird Club* (BIRD-LORE, Nov.–Dec., 1937) is full of suggestions for constructive study. However, he does not suggest food-habits studies, a phase of wild-life work that beginners are exceedingly apt to shy away from. Such studies have seemed out of reach of many amateurs. To most of us they imply widespread killing of animals, cutting open of countless stomachs, and painstaking examination of partially digested fragments. Stomach analysis has a place in wild-life research, but, on the whole, we had best leave it to the professionals.

However, stomach analysis is not the only way to study food habits—nor always the best way. To kill enough birds or mammals of a given species to study its local food habits would often be exceedingly undesirable, and it is *local* food habits that are of the utmost importance. What a Long-eared Owl eats in the Iowa river bottoms may have little bearing on what it eats in Connecticut, so its food habits must be studied in both places.

Pellets of many predatory birds offer an excellent solution to the problem, for they may be gathered in quantities, and their study need not involve killing of protected species. Developing a technique for hunting pellets may become real sport. We learn to look for the spattering of white urates under roost-trees—quickly seeking trees with dense foliage or overgrown by vines as the most likely, and our eyes soon become accustomed to spotting the gray pellets of matted fur, feather, and bone on the ground.

Pellets can be broken apart and the bones sorted out and identified. Trapping near-by with ordinary mouse-traps will give one a good idea of what small mammals to expect in the Owl pellets of the region. The mice are cooked in a weak solution of washing soda till the meat can be brushed from the bones with an old tooth-brush, and are then available for reference. The teeth are especially useful for identifying small mammals, and one can soon tell the fluted cheek-teeth of the meadow mouse family from the rooted teeth of most mice. Shrews have teeth tipped with dark red, and harvest mice and jumping mice have grooved upper incisors. When the larger bones of mammals have become recognizable it will be comparatively easy to sort out any bird bones found. Adding the bones of English Sparrow, Crow, Starling, domestic Duck and domestic chicken

to the reference collection will help one to identify bird bones found in pellets. Skeletons of fish, frog, and snake are easy to distinguish from those of other vertebrates and may be collected by anyone.

The building up of a complete skeleton collection for reference is not practical for the amateur, but he can identify most of the food taken by having bones of a few species on hand as suggested. Seed collections and insect collections make more detailed study possible.

Hawk pellets are far more difficult to analyze, as Hawks seem to have stronger digestive juices and fewer bones are found in the pellets.

Pellets are of many kinds and types. Raptor pellets are usually grayish with feathers and fur; Crow pellets, hundreds of which may be picked up under big roosts, are comparatively thick and their high grain content makes them fall apart easily; whereas Bittern pellets tend to be sticky and packed with insect matter. However, on some diets, as of fish and insects, certain Hawks, Owls, Crows, etc., eject pellets that look much alike.

Food of foxes, skunks, mink and other carnivores may be studied from the feces that lie near the dens. With practice the sweetish, faintly skunk-like odor of fox-dens may be distinguished from that of skunk-dens. Minks have elongated twisted droppings considerably bigger than those of weasels.

Some feces may be recognized with practice; others are so difficult to distinguish that experienced investigators cannot be sure of them.

Food habits of herbivorous animals are not so easily studied by fecal examination, but valuable data can be obtained from their cuttings. Which trees are the mice girdling and which the rabbits? Careful examination of the tooth-marks on the stem will tell. Which foods do deer prefer in your region? Follow deer-tracks in the snow and list not only the kinds but also the number of plants browsed in the line of travel. Note which foods they seem to prefer and whether they are browsing their preferred foods so heavily that they are killing them out. Deer-cuttings usually leave an untidy ragged edge, whereas the rabbit cuts clean and on a slant, like a jackknife.

In some ways the amateur may have an advantage that the professional does not. He is able to choose his set-up, while the professional is often tied to a certain piece of land with a set number of research projects, or he may be shifted to a new location just as work is well under way.

It is highly probable that everyone lives near an ideal set-up for a research problem if he can but find it. Do you live near an isolated population of any species? Isolated populations of prey or predators are invaluable as they facilitate censusing of both predator and prey; and if we wish to know not only what eats what, but also what effect it has, careful censuses are necessary. Do you have Horned Owls and Marsh Hawks breeding near a Duck-nesting area? How many Ducks nest there? How many mice are there per acre of marsh edge? Is the pressure on Ducks significant and how

does it vary from year to year? Is it the mouse cycle that causes the variation or is it the degree to which the marsh edge is pastured?

Perhaps you have a Screech Owl in the grove and can census the winter bird population. How far does the Owl travel in its hunting?

Local and seasonal food habits need intensive study in many regions—in so many, in fact, that it will be difficult to amass a significant bulk of data without the help of the many enthusiastic and careful amateurs who could well enter this field. Following the food habits of a species in a given region over a period of years is well worth doing. How is agriculture, drainage, or fire influencing wild-life diets? How great a part do population cycles play in changing diets? These and many other questions leave new fields to conquer.

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Bird-Lore

A Bi-Monthly Magazine devoted to the Study and Protection of Birds and Mammals

Edited by WILLIAM VOGT
Contributing Editor, FRANK M. CHAPMAN

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BIRD-LORE'S MOTTO:
A Bird in the Bush Is Worth Two in the Hand

For the first time in BIRD-LORE's history the Christmas Census, which has become an institution of widespread ornithological interest, is published as a supplement to the magazine instead of being bound within the covers of the January-February issue. Eagerly we now await further expressions of opinion from the membership about this departure from custom. In the meanwhile it should be pointed out that the change was favored by a large majority of our readers who responded to the general questionnaire on policy sent out by the Editor last year.

As to the usefulness of the annual mid-winter census, from several points of view, there has long ceased to be any shadow of doubt. First, as a game it has afforded wholesome competition to many hundreds of participants in all parts of North America —a lung-filling, leg-stretching, wit-sharpening game, withal, that has required during the years increasing restriction of the rules by the 'officials' at National Association headquarters and steadily growing sportsmanship and responsibility on the part of the 'players' in the field. The current regulations and editorial procedure would make it very difficult for careless identifications or irresponsible counts to pass the voluntary censors, even if lists embodying such faults ever constituted more than a very small fraction of those returned. As a matter of fact, the bulk of observers are now seasoned veterans and the annual quota of new recruits is made up mostly of alumni of the modern school, the standards of which are in harmony with higher and higher levels in the study and appreciation of birds.

Second, the significance of the lists has continuously increased as the districts represented have come to dot a greater area of the United States and neighboring regions. The grand totals now record facts concerning both the distribution and the relative abundance of winter birds that are available from no other such comprehensive source. The phenomena of cycles are likewise reflected with the passing years, and no future student of the factors that determine the fluctuating populations of animals can afford to ignore the stored data in BIRD-LORE's long series of Christmas tabulations. Some of these, of course, have already been used in the preparation of generalized studies, as in the case of J. T. Nichols' articles on Starling spread and migration (*Auk*, April, 1937) and on Long Island water-fowl (BIRD-LORE, November-December, 1937). It is very unlikely that even the vision of Dr. Frank M. Chapman, who founded the pleasant game of the Christmas Census thirty-nine years ago, could have foreseen the huge growth it was to enjoy, the rich meaning that would develop from it, or that it would one day have a supplementary circulation purely its own.

Turning specifically to this season's returns, we find that nearly every state in the Union is represented, as well as Hawaii and several localities in Canada. It is especially noteworthy that of the 185 censuses of last year all but 22 now appear as 'repeats' from the same territories. Many of the parties sending their observations from the Middle West have well proved their zeal by remaining in the field literally from dawn until dark of their chosen date, despite the prevalence of heavy snowfall in a part of their region. Almost a dozen of the reports include a hundred or more species and subspecies of birds, these coming from South Carolina, Florida, Texas, California, Washington, and New York, with Texas again topping the list as in last year's census. A day's total of 163 kinds of birds would be enough to make European ornithologists stare and gasp, even if it had been made on the most favorable date of the spring migration rather than at Christmastide! But a notable feature of our BIRD-LORE census, as usual, is that certain of the smallest lists, numbering only ten or a dozen species, have an inherent importance scarcely transcended by some of the largest.—R. C. M.

AUDUBON ASSOCIATION ACTIVITIES

THE SANCTUARY FRONT

Important Areas in Florida Dedicated to the Association; Winter Status of Florida Birds and Other News

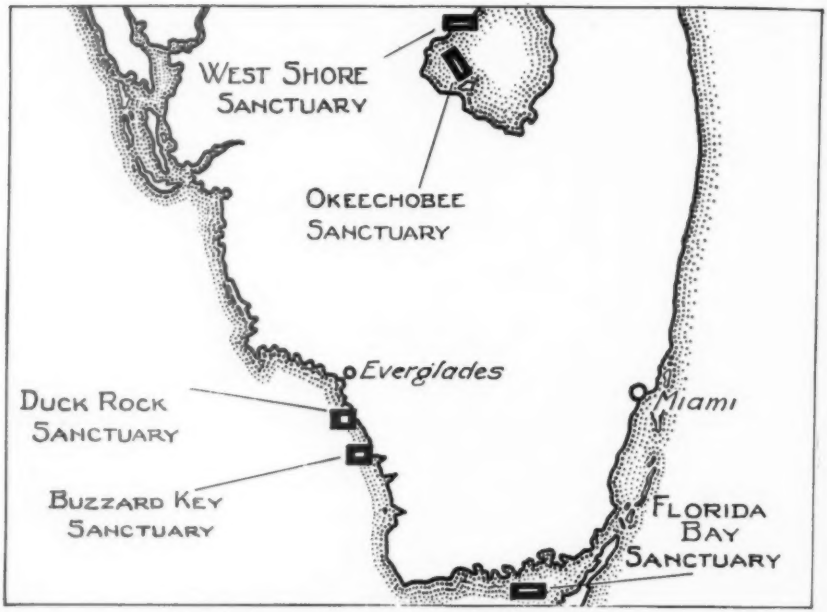
We have more good news of the designation of important nesting and concentration areas as sanctuaries. This item follows right on the heels of the report made in the last issue, of the leases obtained on outstanding islands along the Texas coast, and is in line with our determination to obtain recognition, as wild-life sanctuaries, of specific locations that are regularly used by large concentrations of birds and by species threatened with extinction. This time the areas are in south Florida, and include roosts, feeding grounds, and nesting colonies that we have been guarding. Official action now gives us legal right to administer and patrol.

The general location of each of these new sanctuaries is indicated on the accompanying map. Thanks to the splendid coöperation of the Trustees of the Internal Improvement Fund of Florida, these five localities have been designated as wild-life sanctuaries, under the administration of the National Association of Audubon Societies, in coöperation with the Florida Commission of Game and Fresh Water Fish.

The birds involved are chiefly permanent residents of the Florida peninsula, and are for the most part the larger, more colorful and more conspicuous species that have been gradually pushed into these few last remnants of suitable habitat. The west shore of Lake Okeechobee, for example, is one of the few populous nesting places in the state for the bizarre Limpkin. Up and down this same shore stretch the principal feeding grounds of the great breeding colony of Eastern Glossy Ibis—largest in the Western Hemisphere—established on a partly submerged reef several miles out in the lake. The Everglade Kite, now one of the rarest birds in the United States, may also be observed in this same region. There is no other spot known in our country where one may hear a chorus of Limpkins, watch the fascinating movements of a feeding flock of Glossy Ibises, and at the same time see two or more Everglade Kites in graceful flight, or perched on pickerel weed, myrtle or willow. Yet this is the experience the writer had during a lunch-hour stop within the area now under the Association's care as a sanctuary.

The shallow reef out in the lake, where the Black Ibises nest each spring in numbers that exceed 2000 birds, has also been set aside as one of the new sanctuaries. Since Warden Chandler discovered the presence of this amazing colony a couple of years ago, he has been assigned the job of watching them through each nesting season. But we have learned that it is not enough simply to guard the birds themselves; if our program is to succeed, we must preserve the environmental niche that each species occupies. Now we may breathe easier with regard to the Glossy Ibises. Their principal nesting location, and a large portion of their most important feeding grounds, have been recognized by the State of Florida as sanctuaries and so established.

On the southwest coast of Florida, within



Map showing general location of new Florida Sanctuaries

the boundaries of what we hope will some day soon be the Everglades National Park, we have secured the dedication as sanctuaries of the principal areas of concentration for the vast flocks of Herons, Egrets and Ibises that repair to coastal keys, and neighboring waters and flats, at the close of the spring breeding season. These are the famous key known as Duck Rock and the important group of mangrove islands a few miles to the south, including Buzzard Key, Bird Key, the Plover Keys and the Auger Hole. From June until the end of October these islands are literally covered with tens of thousands of White Ibises and many thousands more of Egrets and Herons. Duck Rock is also a favorite roosting place, and the Auger Hole a favorite feeding ground, for Roseate Spoonbills. The two areas combined constitute the largest post-nuptial roost that we know of, and securing the establishment of these locations as sanctuaries is an important step toward the permanent security of these spectacular Florida birds.

Certain of these keys are regularly frequented, as roosts, by large numbers of Brown Pelicans, Florida Cormorants, and non-breeding Man-o'-war-birds.

The fifth and last area dedicated to our care by the State of Florida comprises the only known, regular nesting-site of the Roseate Spoonbill in that state, where it was once so abundant. This is the Florida Bay location discussed in the last issue of BIRD-LORE in connection with plans for this season's warden service. It will be of interest to report that the Spoonbills at this sanctuary have behaved beautifully, but the weather has been quite uncoöperative. Everything went well until November 26. Warden Claude Lowe reported a week of northeast winds, which diminished on that date and were followed by a foreboding calm. Realizing that a real blow was coming, he was getting both the houseboat and patrol boat battened down to meet it, "when the wind struck us like a solid wall." All night long he struggled to keep the two crafts afloat, and finally at dawn managed to get them both into harbor some miles away. When it was all over, Warden Lowe found staved planks in both boats, fortunately

above the water-line, while he himself had "quite a few cuts and bruises from the night's frolic."

For the remainder of the nesting season Warden Lowe will have the use of our 36-foot cruiser, the *Audubon*, which has been transferred from the west coast. The Spoonbills came through the storm safely and in the middle of December the colony boasted 18 newly completed nests.

More Birds!

Bird-life is abundant this winter on the southern mainland of the Florida Peninsula. According to Warden Barnes, who flew over the entire Big Cypress area north of the Tamiami Trail, the concentrations are all south of the Trail. Alexander Sprunt, Jr., our Supervisor of Southern Sanctuaries, confirmed this in a flight that he made on December 7. He reported greater numbers of Wood Ibises, American Egrets, White Ibises and the smaller Herons, than he had ever before observed from a plane. These birds were scattered through the many lakes northeast of Cape Sable, within the proposed Everglades National Park. Large numbers of water-fowl were also observed, especially Blue-winged Teal, Pintail, Lesser Scaup, and Coot. One group of 50 Canvas-backs was seen.

More recently, the chief wading-bird concentration has moved to the Glades, about midway along the Tamiami Trail. Warden Barnes, with one eye on these birds and another on automobile traffic along the Trail, arrested two men on December 24 who were shooting from their car. They were taken before the Collier County judge and convicted. Both men paid fines and their guns were confiscated.

Mr. Sprunt reported two Great White Herons along the Trail on December 8, both standing on the shoulder of the road. This is further evidence of the improving condition of this species. He also noted many Coots, Gallinules and a few Ducks in the canal along the highway, "more of these birds than I have seen along the Trail in recent trips." Evidently efforts to cut down on highway shooting are beginning to pay dividends!

In Florida Bay, in addition to the Spoonbills, the arrival of winter found the Great White Heron of that region in satisfactory shape, and, after his observations of early December, Mr. Sprunt writes us, "they are slowly but steadily pushing up toward Card Sound, which is roughly the former limit of their range to the eastward." There has also been a noticeable return of Reddish Egrets to the Florida Keys in general, and the numbers of white phase birds among these suggests very strongly that their origin must be the West Indies.

It is a pleasure to announce the full-time employment of James Earl Moore of Miami for duty in south Florida. Mr. Moore will assist J. Ray Barnes on the extensive patrol that was assigned to him last November. He is a keen student of natural history and has had wide experience as a warden for the State of Florida and for the U. S. Biological Survey. He has also served from time to time as a special warden for the Association.

Miniature Rancho la Brea

The ill-fated spur of the Florida East Coast Railroad, that once penetrated the keys as far as Key West, was perhaps symbolic of the type of progress that destroys the wilderness and sends wild life scurrying to retreats as far distant as possible. It has been suggested that some of the concrete piers of this railroad, that were built across connecting channels between the Atlantic and the Gulf, so changed the flow of the tides that the waters of Florida Bay and the Keys were no longer habitable for large numbers of the snail that is the principal food of the American Flamingo. Whether this is true or not, the construction of any railroad through more or less primitive country is not exactly a friendly gesture toward wild life. One inevitably recalls the division of the great buffalo herd by the completion of the first transcontinental tracks.

The last train on the Key West line was silenced by the Labor Day hurricane of 1935. Of 'Flagler's Folly' only a few stark remnants can be seen—broken trestles and a few twisted lengths of rail. And on the outskirts of Key West the deserted refuse pits into which the old F. E. C. locomotives once dumped discarded oil and other debris! But

Photo by Alexander Sprunt, Jr.

Bird traps recently confiscated

these pits are taking a regular toll of birds and other small wild life. Warden E. M. Moore discovered this situation, and in December the pits were inspected by Mr. Sprunt, who wrote of one of them as follows:

It was a remarkable looking place, and a rather disgusting one. It lies on privately owned land, near the old seaplane ramp on the east side of Key West, though outside of the city limits. It is about 30 feet long by 10 or 12 feet wide. The surface was quite black and unattractive looking, with many peculiar lumps on it which, when investigated, proved to be dead birds. Stirred up with a stick, these remains gave off about as nauseating an odor as has ever been my misfortune to encounter. What with the smell of old oil, plus that of advanced decomposition, it is better imagined than experienced. Moore has counted eighteen dead birds at a time there, and one live one, the latter a Great White Heron, mired to its neck. The bird was killed with a stick. The pit is probably about six or eight feet deep, and is filled with a viscid mass of old oil, about the consistency of semi-liquid asphalt. Stones, when thrown into the mass, sink slowly and the surface closes over them with an inexorable deliberateness that makes one visualize the predicament of the unfortunate creature that happens to be caught in the mess. The birds in it were hardly recognizable as such, only shapeless blobs, in which one can trace the outlines of a wing, or long leg. Probably a victim struggles for days, in a hopeless fight against starvation and suffocation. One would be surprised that anything would alight in the thing as it appeared when I saw it, but it does not always look as repulsive as it did then. Moore says that after a rain, an inch or so of water remains on top of the mass for some time before evaporating, and when this is the case, the place appears as a very attractive pool. It is then that Herons alight in it, and are at once trapped by the nasty mess under the skim of water.

Temporary measures have been taken to prevent the further loss of bird life by covering the pits with brush. Meanwhile the owners of the property have been interviewed and are now planning to do away with the menace as soon as possible.

Educational work in the Key West region has been continued, but Warden Moore is very much in need of a stereopticon lantern. It is earnestly hoped that someone reading of this will express an interest in the fine work Warden Moore is doing, by making a special contribution for the purchase of a suitable lantern. Recently, the Key West City Council provided us with a spare room in the Aquarium Building, which may be used as an office.

Birds Trapped

Numbers of small land-birds, including many migrants from the northern states, are trapped in the Key West area and imprisoned in cages as household pets. This is an ancient practice in that city. We have sought to bring about a desire on the part of the local residents to value birds from a different viewpoint, and have called their attention to the fact that such trapping is a violation of Federal law. Warden Moore has made it clear that further trapping will result in confiscation of traps and the liberation of all birds found in the possession of the trappers.

To date, a considerable number of traps have been taken over, and those operating them, mostly boys, warned, or, in certain cases, taken before a local magistrate. It is hoped that such procedure will result in gradual elimination of this practice.

Kissimmee Activities

In December alone, Warden Marvin Chandler, of the Kissimmee Prairie, covered nearly 3000 miles on patrol. A typical day on the prairie with Chandler involves seeing large numbers of birds. For example, his report for December 1 reads as follows:

> Lake Okeechobee and vicinity (west shore). Covered 100 miles. Observed approximately 1000 Ducks of mixed species feeding in the marsh, also about 100 Limpkins. In addition, the following species were noted: 300 White Ibis, 100 Wood Ibis, 90 Glossy Ibis, 50 White Pelicans, 5000 Coots, 300 American Egrets, 50 Snowy Egrets and 3 Everglade Kites.

On the 9th, traveling from the Arcadia Prairie to Lake Okeechobee, Chandler estimated a total of 10,000 Ducks scattered over the marshes and in the lake itself. Most of these were Lesser Scaup. Another day took him up toward Lake Istokpoga and he reported a total of 300 Florida Cranes feeding in the marsh, and on the prairie 10 Caracaras and two Burrowing Owls.

It is his impression that the Florida Burrowing Owl is less abundant this season than in several years. Mr. Sprunt writes us, "as to evidence that Burrowing Owls are 'off,' I say it simply because one doesn't see many Owls! There are less to be seen about the Okeechobee area than three years ago, of that I'm certain. I have made no detailed study as yet, and sometimes, according to dryness or wetness (of the prairie), they move about in groups and could easily be missed. But now it is something of a job to find any. A pair here and one there, with long distances between them." A survey is planned for the nesting season, when it will be more feasible to locate the pairs at their burrows.

As we go to press, the Cranes and Caracaras have begun nesting, and reports indicate an excellent season. Limpkins are abundant and should do well in the coming year.

At the Rainey Sanctuary in Louisiana, the first heavy flight of Blue Geese started coming in on the 23d and 24th of October. By the 16th of November their numbers had reached 2000 on the sanctuary, and this flock built up steadily until there were 20,000 by the week of December 11. The many thousands of Ducks on the refuge in December included 2000 Canvas-backs. Although an extra warden has been on duty, patrolling on horseback along the southern extremity of the area, we have had trouble from poachers. These men were not after Ducks and Geese, however, but were attracted by our thriving muskrat population. Their traps were pulled up and turned over to their employer, who gave them such a reprimand that it was thought by our Superintendent, Richard Gordon, unnecessary to press charges.

Other winter activities include the construction, at the Roosevelt Sanctuary at Oyster Bay, Long Island, of a small nature museum which will be the starting point of a new nature trail that we plan to establish there next spring. The museum will be of interest to visitors of all ages, and its completion will officially inaugurate a new educational policy at the sanctuary. More details of this will appear in a subsequent issue.

For the first time in nearly 40 years of sanctuary maintenance, Audubon wardens will wear a standard uniform. Outfits for twelve of our most active men have already been supplied, and in time we plan to have uniforms on all of the thirty to forty wardens. Thus far only shirt and trousers are being supplied. These are an attractive olive-drab in color, and carry on the left shoulder the recently adopted insignia of our warden force. This is a four-inch circle of red, with a narrow border of black. Against this, in heavy black thread, is silhouetted the word *Audubon* over a characteristic figure of a Heron. We want this uniform to stand for appreciation of wild life, such as is brought about through the efforts of the men who wear it, for fearless enforcement and devotion to duty. And the wardens say that it will give them added respect for their jobs as representatives of the many thousands of men, women and children throughout the country who support the important work that they are doing.—R. P. A.

SANCTUARY VISITORS' POLICY

It is the desire of the Board of Directors of the National Association of Audubon Societies to encourage visits by members and friends to the sanctuaries maintained throughout the country by the Association. Such visits unquestionably stimulate greater appreciation and tend to widen public interest in the preservation of wild life.

Experience demonstrates, however, that it is essential to establish certain regulations with regard to the conduct of visitors in the immediate vicinity of wild-life sanctuaries, and it is earnestly requested that members and friends of the Association coöperate wholeheartedly with the conditions of the official permits to visit the sanctuaries, which may be obtained on application from the Sanctuary Director at 1006 Fifth Ave., New York, N. Y.

Persons will not be permitted to visit the sanctuary areas unless accompanied by the warden in charge. The warden in charge will have full discretion as to the timing of visits and the conduct of visitors in the immediate vicinity of the sanctuaries.

Visitors must have in their possession a numbered permit signed by the Sanctuary Director, previously obtained from New York, specifying the approximate time of the visit. This permit will be surrendered to the warden in charge at the time of the visit. Wardens will be instructed not to conduct to the sanctuaries persons who are not provided with special permits, even though they may be members of the Association.

Visitors shall not ask the warden to digress from the regular route of his patrol. Visitors will be expected to refund the warden for the cost of gasoline and oil used in transportation. No tips shall be offered to the wardens. Should visitors feel that they wish to contribute more than just the cost of gasoline and oil, contributions to the Sanctuary Fund, sent direct to 1006 Fifth Ave., New York, N. Y., will be deeply appreciated.

No banding of birds and no taking of pictures in the sanctuaries will be permitted without special authorization.

Fullest coöperation in the observation of these reasonable regulations, which experience has proved necessary if the best interest of the wild life in the sanctuaries is to be the first consideration, will be most gratifying.

BIRD-LORE EDITOR GOES TO PERU

Mr. William Vogt, for the past four years editor of BIRD-LORE, has resigned to accept the position of consulting ornithologist with the Peruvian Guano Administration. He sailed for Lima, January 13, and will devote the next year to researches on the guano birds of the Humboldt Current.

In leaving, Mr. Vogt said: "Despite the impressive and interesting opportunities that lie before me, I cannot give up the editorship of BIRD-LORE without sincere regrets. The associations, through the magazine, with readers, contributors, and my colleagues on the Audubon staff, have given me one of the richest and happiest periods of my life. I should like to express, at this time, my appreciation of the unfailing coöperation of everyone interested in BIRD-LORE; this has made possible such accomplishments as I have been able to achieve, and my successor will find this helpfulness one of the pleasantest aspects of his work."

Report by Mr. Roger T. Peterson, on the Association's Education Program, Annual Meeting, 1938

On November 1, 1934, just four years ago, the writer became a member of the staff of the National Association of Audubon Societies. His duties during most of that time have been largely concerned with the educational work, chiefly in the production of educational materials, and, to a lesser degree, in promotion of their use.

People often wonder how a person can devote day after day to nothing but birds. Just what does a person do, working at a bird job? The work in the Audubon office is anything but narrow and limited. Diversity is one of the pleasantest things about it. There are such things as leading occasional field excursions, assisting garden clubs with their exhibits, making ornithological surveys such as the one the writer recently participated in in the Santee Basin in search of near-extinct birds—and innumerable other activities.

We are constantly called on by writers and magazines for our counsel in ornithological matters. Manuscripts are submitted to us for our opinion. From time to time we are asked to prepare articles for one of the national publications. Last spring, at the invitation of *Life* magazine, the writer helped prepare a section on bird migration, which included four full pages of his work in color. This proved to be the most popular 'non-art' article that has thus far appeared in *Life*, we are told. Probably this was the largest initial printing of bird pictures in color ever made, as the magazine has a circulation of something like two million. The issue of *Life* in which the bird pictures appeared was chosen to be the one buried in a capsule at the World's Fair as part of the record of present-day civilization. Archeologists will presumably take this up 5,000 years from now and learn that in 1938 spring migration was a week early.

The other members of the staff refer to the correspondence received by the writer as the 'Dickey bird' mail. Thousands of letters asking general ornithological information have been referred to me, and I wish I had time to give a few samples of the rather priceless contents of some of them. These letters range all the way from flowery requests from humble Hindus for numerous free books and field-glasses, to requests from prison inmates for complete lists of birds so that they can bestow a sort of ornithological nomenclature on their fellow inmates. Besides these, there are always the more serious or technical letters, such as requests for information concerning the auricular response of a Sea Gull, and requests for advice from young hopefuls who are planning to follow an ornithological career. Telephone calls of the same nature pour in by the thousand during a year's time.

During the last four years I have given approximately 100 lectures in 18 different states, to audiences varying from a dozen to 1,500. At least 75 radio broadcasts have been given. We have had as many as 90 letters from 10 different states in response to a single broadcast.

During the summer of 1935 I was sent to Maine to make a reconnaissance of the island and the bay where the Audubon Nature Camp is now located. Motion pictures and stills secured that summer were used in the early Camp publicity. The first season the Camp was open, in 1936, I spent the entire summer there as a member of the staff, and became familiar with the diverse problems of the teachers and youth leaders in attendance.

For over a quarter of a century the National Association has fostered the formation of Junior Audubon Clubs. Millions of Bird Leaflets have been distributed to the youngsters of these Clubs.

In 1935 a survey was made of schools in New York, Massachusetts, and Connecticut, where Junior Clubs had been formed. The comments of teachers indicated that the color-plates were fine, as were the outline drawings to color, but many teachers of the younger grades found the text too difficult—too far above the level of their children. They used the pictures but had to interpret the texts. So two sets of texts were prepared—one aims primarily at the third- or fourth-grade level. This is usually interpretable to the first and second grades and

usable in the fifth. The other text is aimed primarily at the sixth and seventh grades, but is useful throughout high school.

In the past four years 62 of these new-style leaflets (covering 31 subjects) were written and illustrated. Over 3,800,000 have been printed to date. Between 2,500,000 and 3,000,000 have already been distributed; the remainder will have been distributed before the end of this school year. About 1,000,000 of the old-style leaflets have also been distributed within the past four years, most of these in the fall of 1934 and the spring of 1935, before our present leaflets were ready.

The new leaflets met an immediate response. The Junior enrollment, which in the school year of 1934-35 totaled slightly over 120,000, jumped in 1935-36 to 155,000. The enrollment was 170,000 in 1936-37 and 164,000 in 1937-38, a total of 610,000 members for the four years.

Anyone familiar with the classroom knows that few people work harder than teachers do. The crowded curriculum and the great number of activities leave little opportunity for the teacher to plan methods and devices of her own. So we have been helping them along by furnishing them with leaflets on methods and devices. These articles, which first appeared in BIRD-LORE, have been reissued as separate leaflets. Nine leaflets of this Bird-Study for Schools series have already been issued.

To date 87,500 of these Bird-Study for Schools leaflets have been printed for distribution to teachers. The influence of some of these leaflets has been even wider than these figures would indicate, as frequently portions are reprinted, or adapted by school systems, in different states.

The Bird Day leaflet was adapted for use in Utah, and distributed to every school in that state. Similarly, many of the projects were incorporated into a leaflet for distribution throughout Indiana by the state school system there.

A leaflet on Bird-Study for Camps has been prepared and 5,000 copies printed and distributed.

There is now in preparation a series of articles on the relation of wild life to the land. The first article of the series, on soils, has just appeared in the last issue of BIRD-LORE. This will be followed by similar articles on water, forests, grasslands, marshes, etc.

A 32-page booklet on Song-Bird Sanctuaries with tables of trees, vines, and shrubs attractive to birds, has met with wide approval by garden clubs and local bird groups: 15,000 of these have been printed.

Four essay contests were held during the last four years on the following topics:

Why Protect the Bald Eagle?
What I Have Done as a Member of My Club.
Should We Protect Hawks?
Why Should We Have Bird Sanctuaries?

Returns came from nearly every state in the Union, and each year saw a greater response than the year before.

In attempting to fill certain needs of the amateur bird student, we have made available a new series of field cards for their use in checking daily finds. These will appear in two editions, one on light stock, punched with holes along one margin, to fit a standard-size ring binder, the other on card stock folding flush, for filing.

Three of these check-lists are now ready, one for eastern North America east of the Mississippi River, the second for the central United States roughly from the Mississippi River through the Great Plains to the Rocky Mountains; the third covers the three Pacific States. A fourth card covering the Mountain States has already been prepared and will be issued if there is sufficient demand.

We have also prepared a standard field handbook for which there has long been a need among field students. This will facilitate the keeping of good authoritative notes, a thing which a great many students are so lax about.

One of the most enjoyable tasks has been the preparation of seven color-plates for the booklet *Beautiful Birds of the Southern Audubon Sanctuaries*.

In going through my portfolios I find that during the last four years I have done over 480 drawings and paintings. These include BIRD-LORE covers, decorative maps, line drawings, wash drawings, etc. There is little danger of becoming rusty with the brush if I continue to have such opportunity to draw in my daily work.

We are hoping to find means of publishing a series of mammal leaflets similar to our Bird Leaflets. Two samples are in preparation, also leaflets on other branches of the animal kingdom.

The series on wild life in relation to the land will be followed by leaflets on the interrelationship of the animals themselves, predation—insect-eating birds, fish-eating birds, birds of prey, etc. A leaflet on activities for very young children is a necessity. A leaflet on nature trails has been pretty well thought out, and needs only the time to execute.

With Miss Hahn at the helm to promote the use of these materials in the schools of the country, it is certain we shall make even greater strides in the next four years.

Our only regret in this Audubon work is that the days are not long enough to do the multitude of things we would like to do. There is no dearth of ideas for the future.

Remarks of Mr. Douglas C. Orbison, Membership Secretary, at the Annual Meeting

The past year has been marked by considerable growth in our membership. During the twelve months ended September 30, 1111 persons were admitted to membership by vote of the Directors.

The greatest enrollment took place during the months of March to June. Of the 715 persons then admitted, 598 came in response to an invitation extended by the Directors. Since about 49,000 such invitations went out, this response represented a favorable return of 1.22 per cent. This is well above the best previous percentage of .7 per cent obtained in similar drives in the past. The result is all the more noteworthy in view of the extremely disturbed economic and political conditions prevailing at home and abroad.

I believe we are justified in taking pleasure in this clear evidence of a lively and growing interest in wild life and in what this Association is doing for its conservation.

From a financial aspect, also, the spring campaign was remarkably fruitful. The cost of sending out the invitations amounted to $1865.09, while the sum received up to June 30 was $4426—in other words, the entire operation ended with a favorable balance of $2561.

Within the next two or three weeks we plan to send to extensive selected lists of persons literature that will carry to them a picture of the activities of the Association, with a view to enlisting their support.

We shall attempt especially to reach persons living in towns and the smaller cities, whose names do not appear in the majority of lists so far available and utilized in our membership appeals. Our current membership tends to be concentrated in the great centers of population. We shall attempt to reach areas and groups that do not seem to have been adequately covered up to this time.

Such a campaign should have doubly fruitful results. It will serve to clarify the character and work of the Association in the minds of thousands who have only the vaguest conception at the present time.

Some of you must have seen the pieces that have appeared in *The New Yorker* magazine, gently poking fun at the strange maneuverings of early-morning birding groups in Central Park and elsewhere.

I say *gentle* fun for, as a matter of fact, the editorial writer on *The New Yorker* is himself infected by this malady, though possibly in a milder form.

I have just been referring to our membership in terms of numbers and dollars and cents. Let us think for a brief moment of our *members*, rather than of our *membership*, of quality rather than quantity. Think in terms of the spirit, if you like. . . . for assuredly the strength of the Association and the stability of its work, depend fundamentally upon such spiritual factors as faith and loyalty and courage. In these difficult times, have our members the will to stand by the Association, and the power to continue their support?

Not long ago a letter came from one of our members. He wrote, "For years I have sent my pittance toward the work of the

Society. Now I enclose check for $5.00. I am nearly 84 years of age. Am not earning; have no pension. Income of self and wife has sadly shrunk and is still shrinking. For daily expenses we are drawing on our principal. Accept this little gift as my farewell offering."

This is just one instance of the wonderfully generous and loyal spirit that fills so many of our fellow members and from which flows the real strength of the Association.

In closing may I venture to make one point? There are few, indeed, of us who do not know at least one other person who would gladly join in supporting this work—if only given a friendly and persuasive word of encouragement. Every member is in a position to help in a very practical and effective way by asking his friends to join the Association. We should be proud to point to its achievements, and happy to invite our friends to share in them.

PHOTOGRAPHY REVIEW

By **T. S. Pettit**

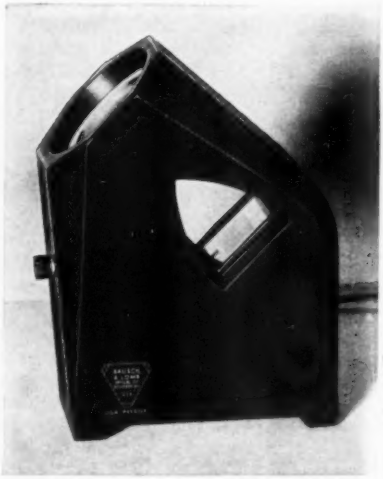
Wild-life photographers who cherish the idea of seeing their work published are offered such an opportunity by the WPA Federal Writers' Project, which is now preparing a volume on the natural history of the United States.

This book will be the fourth in a series of popular science publications, and will be profusely illustrated. The editor is particularly anxious to get photographs of all forms of American wild life in their natural habitat. The project has no funds to pay for such photographs, but will credit each photographer. Send your glossy prints to Ralph De Sola, Zoölogical Editor, Federal Writers' Project, 110 King Street, New York City.

To any photographer who has difficulty remembering the film speeds of the many standard films sold today, BIRD-LORE will send the comparative ratings, printed on a postcard. Send your name and address to Photo Editor, 1006 Fifth Ave., New York City.

Bird behaviorists who want to make photographic records of their work will welcome the remote-control attachment for the Robot camera. The unique action of this camera makes it possible to take a series of 24 shots on one winding. Rapid-fire action photographs are possible without turning the film after each shot. Release the shutter, and a built-in motor does the rest. Combining this with a remote-control attachment, nature hobbyists can photograph nesting birds without going nearer to the nest than the length of the cable; 35 mm. film is used, and almost a complete roll may be exposed before a rewinding is necessary. The remote-control device is operated by a small dry cell, and, according to the manufacturer, is absolutely foolproof, and certain in its action.

Miniature camera users who want to view their color work, or black and whites, without going to the expense of buying a



Slide Viewer

projector are advised to look at the new Bausch & Lomb Slide Viewer. It is made of bakelite and is easy to operate. Place the slide in the side opening and turn on the light. The film is seen through a ground and polished 3¼-inch lens, and the light

from the 25-watt Mazda bulb, properly filtered and diffused, brings out the maximum color value of any film.

Bird photographers who like to ride their hobby in the early morning or late afternoon, when light conditions try the skill of the most advanced photographer, should examine the new Photrix SS Exposure Meter. It has been designed for increased sensitivity and will register under extremely dim light conditions. While the meter is being aimed, it is not necessary to take any readings. Set the ring so that the red index registers with the needle indicator. This automatically lines up all usable combinations of film speeds and exposure times.

The Photo Lab Filter Meter should help the wild-life photographer who is also a pictorialist. Subjects are viewed through a small aperture in the viewer, in which filters of various colors appear, as a disc is rotated with the finger. When the desired effect is obtained, tables on the filter meter tell which filter to use and its filter factor.

Anyone desiring further information on any of these new products in the photographic field is advised to send such inquiries to this department.

New Bimonthly Bulletin of Junior Audubon Club Activities

News on the Wing, a bulletin devoted to the interests of the Junior Audubon Clubs, made its bow in January, 1939. It is edited by Miss Patricia Hahn, Junior Club Secretary.

This is to be the clubs' own news sheet, with accounts of activities contributed by the boys and girls belonging to the clubs, as well as by the teachers or other leaders who organize the clubs.

It will be sent to the clubs during the school year, in the months alternating with the publication of BIRD-LORE, namely, in November, January, March and May. The initial number has been sent to every club formed in this and the three preceding school years. All subsequent issues will be sent only to clubs organized during the current school year.

This new bulletin may be expected not only to stimulate organization of new clubs, but greatly to enhance the interest of members in existing clubs. It will also serve to create a closer relationship between the boys and girls and National headquarters.

Jaques Exhibit in Audubon House

An exhibit of paintings and drawings by Francis Lee Jaques was held in Audubon House from December 3 to 23, 1938. This was the second of the series of exhibits held in the rooms of the new Association home, and the first in a series of one-man art shows scheduled for the coming year.

Among the paintings shown were many painted while Mr. Jaques was on expeditions to distant countries. He exhibited *Hatter's Quarry—Easter Island*, *Bounty Bay—Pitcairn Island*, *Australian Ducks*, all painted in the South Seas. *Eiders Offshore* and *Alaskan Peninsula* were done while Mr. Jaques was in the Arctic with Capt. Bob Bartlett. Paintings of American water-fowl were featured. Blue-winged Teal, Green-winged Teal, Wood Ducks, Buffle-heads and Golden-eyes, and Snow Geese were shown.

The black-and-white drawings used to illustrate *Canoe Country*, written by Florence Page Jaques, were also on exhibit.

Many Association members living in the New York area visited the exhibit, and at the same time looked through Audubon House.

Habitat Group

For the purpose of stimulating interest in Junior Audubon Clubs, a habitat group of common winter birds to be found in the New York City region was displayed at Audubon House, January 11 to 25. Mounted specimens of twenty-five species, together with feeding devices, were shown in a natural setting, depicting a winter scene with typical birds to be found in a metropolitan area.

Invitations to attend this exhibit were extended to the children of various private and public schools in New York City. After studying the exhibit, the children were given a sheet of questions to be answered concerning their observations. The groups were then shown attractive motion pictures of birds and animals. This was the first in a series of educational exhibits offered free to children during the school year.

Present Status of the Trumpeter Swan

Once practically given up as lost, the Trumpeter Swan, according to most recent information, seems safe from the threat of any immediate extinction. Whether its numbers will ever increase enough to enable it to repopulate any of its former range remains for the future to reveal. It is not, however, beyond the realm of possibility.

In the United States all the Trumpeters are confined to a small area where they remain the year around. This area lies in Yellowstone Park, in northwestern Wyoming, and in Montana adjacent to the park where the United States Biological Survey has established the Red Rock Lakes Migratory Waterfowl Refuge for the special protection of this species. The total count last summer for the area came to 81 adults and 77 young (or cygnets), which is a 37 per cent increase over last year—a rate which, if it can be maintained, will mean a fine stock in a few years.

Fortunately, Canada also has a remnant of the Trumpeter Swan, and from Mr. J. A. Munro, Chief Federal Migratory Bird Officer for British Columbia, we get the following report:

In 1918 the Canadian Government, under authority of the recently completed Migratory Bird Treaty, undertook to provide a special protective service for Trumpeter Swans in British Columbia.

At that time definite information was available regarding the wintering ground of one band which at its maximum contained twenty-two birds. The area involved was established as a Federal Bird Sanctuary with a warden service which is still maintained. Subsequently the greater part of this particular band died from lead poisoning; the number returning grew smaller each year and the flock finally disappeared.

Meanwhile the presence of other larger bands elsewhere in the Province became known and for the more important of these special warden service was provided.

It is now well established that the Trumpeter Swan winters from near the Washington boundary to at least latitude 55. One winter population, which usually includes about fifty birds, appears each year on a group of lakes close to the coast; another population varying from sixty to one hundred is located fifty miles inland. Others again remain in the central interior on certain rivers where the current is sufficient to keep the channel free of ice in normal seasons. Smaller flocks up to fifteen or more appear with less regularity on various sheltered salt water lagoons.

Some of these places are remote and difficult of access so that regular yearly reports cannot be obtained but there is no reason to believe that the numbers of birds in these flocks fluctuate more than do those which are regularly inspected.

The exact nesting grounds of these birds is unknown. It seems improbable that any large number nest together in any particular area; the evidence at hand suggests that the nesting grounds are spread over a vast territory where single pairs occupy numerous isolated ponds and muskegs.

The number of cygnets usually equals or exceeds the number of adults and from this it can be inferred that the summer loss through natural enemies is not large. Nevertheless there is, periodically, a heavy loss from starvation brought about by adverse weather conditions. Very likely also when such conditions prevail some birds, weakened by hunger but capable of surviving the winter, are killed by predators This condition can be controlled to an appreciable extent by artificial feeding as Canadian Government wardens have demonstrated.

The present wintering population in British Columbia is estimated to be at least 500. In order to insure the survival of the species it would seem necessary to concentrate on the preservation of the individual bird.—R. H. P.

BOOK NEWS AND REVIEWS

BEHOLD OUR LAND. By RUSSELL LORD. Houghton Mifflin Co., Boston, 1938. $3.00.

In a very readable story, the author has dramatized the problem of what to do about our soil, which is being diminished at an unbelievable rate. He uses his background as a reporter, his travels, much reading in science, history, and contemporary problems, to bring before the American public a fact that few realize, or if they do, dismiss with little thought. He is not an alarmist. But he shows that after scarcely three centuries on this continent, we have depleted nearly half of the tilled or tillable land, which required some 5000 years to be built up by nature.

Washington, Jefferson, and Patrick Henry all saw the evils that resulted from the kind of farming that ruins the land. But under economic pressure, farmers have continued to eke out a living, moving on when land could no longer produce. Many agencies are now working to restore our land. But there is all too little time for this purpose. Now that the battle is begun, it must be vigorously carried on.

Dramatic photographs taken for the Soil Conservation Service pictorially supplement the gripping text.—T. S. PETTIT.

WILDFOWLING WITH A CAMERA. By LORENE SQUIRE. Illustrated with photographs by the author. J. B. Lippincott Co., Philadelphia. 210 pp. $7.50.

Wildfowling with a Camera is an impressive volume which is rich in the lore of discovering the haunts of wild-fowl and stalking them for the purpose of making photographs. With great singleness of purpose, Miss Squire crept close enough to these wary birds to make photographs that show the spirit and wildness of her subjects, the favorites of many bird-lovers. The text tells in a direct, crisp manner about the pursuit of her quarry through marshes and sloughs, across storm-beaten lakes, in bad weather and good, from Kansas to the wilds of northern Canada. While telling of her experiences, Miss Squire adds a fund of interesting information gathered from her intimate observation of these birds at their nesting-grounds, while migrating, and in their winter homes.

The hundred photographs which illustrate the book catch the spirit and wildness of the Ducks, Geese and shore-birds as well as the atmosphere of their marshy habitats. Some of the photographs have been enlarged too much. Indeed, in such a book, a few could well have been omitted. One whole school of photography will object to the soft, rather fuzzy reproductions, but one feels that even those critics will be won completely by such beautiful pictures as the baby Canvas-backs, Lesser Yellow-legs on a sandy edge of a marsh, skeins of Canada Geese against a cloudy sky, and several breathtaking pictures of Ducks at evening as they drift over the marshes.—H. G. CRUICKSHANK.

THIS IS LIVING. By DONALD CULROSS PEATTIE and GORDON AYMAR. Dodd, Mead and Company, New York, 1938. $4.00.

"It is a slender world in the cosmosphere that is set aside for us to inhabit—no more than the surface of one drifting bubble. . . . Within these frail dimensions all living things are crowded, flung together in an intimacy that means struggle. . . . This is living." This is the theme of the book, which is a view of nature with photographs. The eight parts into which the book is divided give some idea of the coverage of its contents: Life-Force, Young Beginnings, Home, Living Together, Hunger, Mysterious Ways, Death, and Life the Conqueror.

Portraying nature in all its glory, the photographs of stars and microscopic ani-

mals, men and spiders, giant trees and their bird inhabitants, all are accompanied by an individual text written in the characteristic prose of Mr. Peattie. At times it is difficult to choose between the beauty of the prose and the beauty of the photographs. Mr. Aymar has done an admirable job in selecting the 135 photographs of which the book is composed, but it seems a pity that the reproductions of these photographs are not all that they might be.

The authors have succeeded in their purpose—to show pictorially how nature works. The running text more than supplements the photographs. *This Is Living* is a delightful book.—T. S. Pettit.

Southern Nature Stories. Book I. By W. B. Baker, Lucien Harris, Jr., and Wallace Rogers. Turner E. Smith and Co., Atlanta, Ga., 1938. 230 pp.

The subject matter of this book is so general that it would be almost as useful in the North as in the South. About half of it is devoted to birds and the remainder to mammals, insects, reptiles, amphibians, and plants. One particularly good feature is the use, in this first book, of terms that the children will use as adults. For example, antennæ is used whereas in most beginners' books one unfortunately finds "feelers," and then two or three books later the children must learn that the term was incorrect. The book will be most useful for children from eight to twelve. Suggestions for activities are simple but of a nature that leads one to think the young readers will carry them out.

The information is given in an interesting manner and the facts are true. For this reason one regrets that while even the poisonous snakes are presented in a very sane fashion, the Hawks that feed on things man particularly likes are labeled definitely bad without any explanation of their place in nature, thus forming a prejudice in the minds of the children.

Photographs liberally illustrating the text are, as a whole, good even though the reproduction has destroyed a desirable contrast. The references for teachers could be considerably improved. The index is complete and children can use it with ease. This is a book that teachers looking for nature material for young children should certainly inspect; nor should they be misled by the apparent limitations of the title.—H. G. Cruickshank.

Recent Publications

Edited by S. C. HARRIOT

Barton, William H., Jr. and Joseph M. Joseph. Starcraft. New York: Whittlesey House. $2.50. Juvenile.

Davis, Arnold M. Erosion on Roads and Adjacent Lands. Leaflet No. 164. U. S. Department of Agriculture. Washington, D. C.: Superintendent of Documents. 5 cts.

Edge, Rosalie. Our Nation's Forests. New York: Emergency Conservation Committee. Free.

Gaines, Stanley H. Bibliography on Soil Erosion and Soil and Water Conservation. Misc. Pub. No. 312. U. S. Department of Agriculture. Washington, D. C.: Superintendent of Documents. 60 cts.

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For the convenience of our readers, all of the books listed above, with the exception of State and Federal publications, may be purchased from the Service Department of the Audubon Association.

THE SEASON

CXXV. October 15 to December 15, 1938

Boston Region.—The period under review has been characterized by most exceptional mildness and continued excess precipitation. My colleagues and I agree in feeling that, on the whole, bird-hunting has been poor and unsatisfactory. The absence of any sharp contrasts in weather resulted in a steady trickle southward of the later fall migrants. There were no days when 'waves' of birds flooded the country as last year, while the winter residents arrived slowly and, on the whole, belatedly. It follows that the rarer winter visitants are largely unreported. On October 17, the temperature soared to 87 degrees, 6 degrees higher than the all-time record, and very mild days lasted until the end of November. A sudden cold wave on November 25 and 26, and another on December 1 and 2, brought 10 inches of snow and ended the fall migration. Mild weather rapidly eliminated these wintry conditions, and lasted until the close of the period. On December 15, 550 degrees of excess temperature had accumulated for the year 1938 near Boston, and the precipitation totaled 25 per cent above normal!

Red-throated Loon—heavy flight October 23 to the middle of November; 150 seen by one party in one day.

Holboell's Grebe—very poor flight.

Horned Grebe—only 20 per cent of normal numbers reported.

Water-fowl—the picture here is somewhat mixed. The Canada Goose flight was about normal in Essex County, but amounted to nothing on the outer Cape, until the wintering population began arriving in December. The number of Brant was relatively insignificant. Except for the great concentration area off Monomoy Point, the number of sea-fowl was generally poor, and they were late in arriving. The same was true of the bay and estuarine species, except the Buffle-head, where a continued marked increase took place again. Thus at Plum Island and Newburyport harbor, the wintering Duck population was only 50 per cent of that of the past two years by mid-December, with the count of Buffle-head and Red-breasted Mergansers by far the highest ever. Of the pond and lake Ducks, there were sharp increases in the number of Lesser Scaup and Ruddies, while Hooded Mergansers also continued the increase of recent years. In the Anatinæ there was a great flight of Green-winged Teal, but Baldpate and Pintail were scarcer than normal. About the usual number of straggling Redhead, Canvas-back, Shoveller, and European Widgeon were reported.

It transpires that the great concentration area for Ring-necked Ducks in New England is Little Quitticus Pond, Lakeville. The count is well worth giving, as it is the largest in the Northeast: November 5, 25; November 13, 150; November 20, 556; November 25, 630; November 26 (after cold wave), 30. Outside of Squibnocket Pond, Martha's Vineyard, no spots in eastern Massachusetts have yielded any counts of Ruddy Ducks worth mentioning in many years. This season, however, Emilio and Alexander saw 22 in Essex County on November 20. There were 72 at Lakeville the same day (Griscom), and on November 26 there were 129 on the Mill Pond, Brewster (Garrison and Griscom).

Off Monomoy Point, the gatherings of sea-fowl were most spectacular. On November 6 there were a quarter of a million Scoters, 98 per cent White-wings, 1 to 2 per cent Americans, 10,000 Old-squaws, and only 7 Eiders flying south singly. On November 26 there were perhaps 50,000 birds, of which 15,000 were Eiders, 5000 Old-squaws, and the remainder Scoters in the same proportions as earlier.

Hawks—very poor numbers throughout the state. Only a few stray Goshawks, and Rough-legged Hawks particularly scarce.

Yellow Rail—only 2 at Marshfield (Hagar).

Coot—unusually numerous throughout eastern Massachusetts; a real flight.

Shore-birds—lingered later in numbers than ever before. No less than 17 species

recorded in November. The Semipalmated Plover at Squibnocket, November 25 (Hornblower); Lesser Yellow-legs, November 20, Newburyport (Emilio); Western Sandpiper, November 6, Nauset (Curtis, Griscom, Richardson), are dates without precedent.

Gulls—scarcely any of the 3 white-winged species. Continued heavy flight of Ring-billed Gulls.

Common Tern—numerous stragglers until second week in November.

Alcidæ—hardly any reported.

Snowy Owl—Plum Island only.

Short-eared Owl—unusual number of reports.

Land-birds—as a whole, scarce throughout period both in variety and number of individuals. Particularly poor flights in the case of Northern Shrike, Myrtle Warbler, Pine Siskin, Fox Sparrow, Lapland Longspur. Notably heavy flights of Golden-crowned Kinglet and Rusty Blackbird. Northern Finch reports are confined to a few straggling Redpolls, and just 2 Evening Grosbeaks. Worthy of mention are: Arkansas Kingbird, Topsfield, November 12 (Tousey); Carolina Wren at Weston (Brewer), and Waltham (Bergstrom); Migrant Shrike, Nauset, November 6 (Curtis, Griscom); Orange-crowned Warbler, Brewster, November 26 (Garrison, Griscom); Wilson's Warbler, Brookline, November 28 (Ernst).

Notable rarities were a Lark Sparrow at Lynnfield, October 23 (Hill, Crichton, *et al.*); Dickcissel, Cohasset, October 16 (Chase), adult male at Worcester, October 23 to 28 (Parker and Howes) and, best of all, a flock of 21 Greater Snow Geese at Plum Island, October 22 (Safford). Five of them were shot by hunters; 16 were seen October 27 (Emilio, Griscom) and 1 lone bird lingered until November 15; also a flock of 5 at Manomet, November 9, and 24 at Middleboro, November 9. Fortunately, 2 of the birds killed found their way to the Peabody Museum, where they were positively determined as *Greater* Snow Geese. Let us hope that this will go far toward dispelling the old illusion going back 50 years or more, that the majority of New England birds are *Lesser* Snows, when all that we know of their migration routes and common sense would lead us to suppose that the occasional flocks would be the Greater Snow, just as it is on Long Island and the coast of New Jersey.—Ludlow Griscom, *Museum of Comparative Zoölogy, Cambridge, Mass.*

New York Region.—Weather conditions during this period of the year were, as a whole, warmer than normal, especially during the latter part of October, when clear warm days and nights prevailed. The greater part of November was rainy, foggy, and generally warm, a condition that held fast until a western cold wave swept across the country, bringing, on Thanksgiving Day, a fierce snow storm and low temperatures, followed by another storm on November 26, raising the snowfall to 14 inches in that short period. This drastic change of weather was followed by a mild stretch of normal winter with only small temperature changes. The snows melted and filled the ponds and streams to their edges. The cold spell of Thanksgiving froze the ponds, lakes, and shallow coastal bays, greatly influencing the water-birds in our region, and probably sending them south of us, as witness the lack of Brant on our coastal bays. As the bay and ocean Ducks arrived on our coasts, it was then that we saw the effect of the hurricane on these Ducks and their distribution, for so favorite a spot as Montauk Point was deserted by the great rafts of Scoters, and the birds were noted in large numbers on the western end of Long Island, on the ocean beaches, a region that rarely held more than a few straggling flocks. Gardiner's Bay, Long Island, had large numbers of Scoters and Old-squaw, many more than a normal year's showing. Fresh-water Ducks were reported in large numbers, especially the Black Duck, which must have had an exceptionally successful breeding season. Terns and shore-birds disappeared quite abruptly and few were recorded in this report. Passerine birds in general were few in number and there was no notable southward movement of far northern species, except for the Shrike. The usual reports of early Alcidæ were completely missing, except for one record, and offshore species were notably absent. Quite a large number of species of the half-hardy type were found in the region, the warm weather in general being of the right type to hold these species north.

The flight of Loons must have been heavy, for there are two reports from Long Island, both emphasizing the large numbers that were noted in a short period of observation. Dr. Helmuth states that on the 16th, and again on the 26th of November, with but 10 to 15 minutes of observing, he noted 58 and 49 birds respectively; Cruickshank, at Jones Beach, states that in 5 minutes he counted 97 birds on November 26. Cory's Shearwater, though common north of us, still were scarce in our region, with but two records: 4 at Montauk, L. I., October 23 (Cruickshank), and 25 at the same place, on October 28 (Helmuth). Gannets were common on November 20—133 were seen in 20 minutes at Easthampton (Helmuth). The fall Bittern flight fell off, perhaps due to the hurricane (Helmuth). The Canada Goose was not as common as usual, though a flight of these birds occurred on November 5 (Cruickshank). On the Jersey coast, Brant were noted in small numbers up to the Thanksgiving freezeup but were rare after that period. On Long Island the only records of numbers were 125 on Shinnecock Bay, November 19 (Raynor) and 72 at Point Lookout, December 6 (Mayer). An adult and an immature Blue Goose were reported by many observers from Jones Beach Sanctuary pond on November 6 and several days after. That a Snow Goose flight occurred there is no doubt, for the records are many, the most notable being from Manorville, L. I., on November 25, when flocks of 200, 100, and 150 were seen going over in a southwesterly direction (Raynor); 50 at Pelham Bay, October 23 (Kramer); 30 at Georgica, L. I., November 19 (Helmuth); 6 at East Meadows, L. I., November 6, and 3 at Port Washington, L. I., November 9 (Cruickshank). There were 15 Gadwall seen at Brookhaven, L. I., on November 12 (Jacobson, Fleisher); 1, October 22, Belmar, N. J. (Heck, Allyn, Janvrin); 1, Hillview Reservoir, Bronx, October 23 (Gell-Mann); 1, Bronx Park, November 11 (Norse, Cantor). The general distribution of European Widgeon was unusual, for the bird is ordinarily known from a few favored spots: Watermill, L. I., since October, from 2 to 4 birds (Helmuth); 1, Stamford Reservoir, Conn., from October 12 to November 6 (Spofford, B. T. Brooks, P. Brooks); 6, Hempstead Reservoir, November 12 (Jacobson, Fleisher); 1, Lake Como, N. J., December 4 (Eynon, Hunn, Cant). European Teal, 6, December 11, Hempstead, L. I. (Cruickshank). Blue-winged Teal stayed very late in this region after being more common than known in many years: 1, December 15, Van Cortlandt Park (Norse); 1, November 12, Brookhaven, L. I. (Fleisher, Jacobson). Wood Duck noted on November 18 and 19 at Watermill, L. I. (Helmuth). Redhead, a few seen at Watermill in November (Helmuth), one of the only records of this rare Duck in this region. Buffle-head reported very common, especially on eastern Long Island. Ring-necked Duck, a greatly increased species in our territory, was noted in 2 large flocks: 67 birds, at Stamford Reservoir, Conn., from October 30 to November 24 (Spofford, P. Brooks); 21, December 7, Great Pond, Riverhead, L. I. (Raynor).

Goshawk, 2, October 16, and 1, October 22, Northwest Woods, Easthampton, L. I. (Helmuth); 1, immature, Montauk, November 12 (Fischer); 1, Pelham Bay, November 19 (Norse, Cantor); 1, Hillview Reservoir, Bronx, November 27 (Kramer). Ruffed Grouse on eastern Long Island have been on a great increase from various reports, as many as 18 being seen in one day (Helmuth). King Rail, 1, December 1, found dead at Long Branch, N. J. (Seeley). Piping Plover, a bird that migrates very promptly, was noted as late as December 4 at Barnegat Inlet, N. J., an extremely late record (Watson). The last of the Golden Plover was noted on October 23, at Idlewild, L. I. (Mayer). Purple Sandpiper was recorded in many places from October 30 on, the most unusual point of their wanderings being a flock of 12 seen on the edge of the lake in Prospect Park, Brooklyn, on December 11 (Breslau). In connection with the record it might be said that a strong southwest wind was blowing at the same time a very high tide was running on the south shore of Long Island, covering the usual feeding-spots of these rock-loving birds. Western Sandpiper was still present at Long Beach, L. I., on November 11 (Fleisher, Jacobson). Hudsonian Godwit, a bird that was noted after the hurricane at Mecox Bay, L. I., stayed in that region until October 17 (Helmuth). The large number of Black-backed Gulls that winter on the south

shore of Long Island is rarely estimated, but when a count is taken the number is surprisingly large, for 222 birds of this species were counted on December 6, from Long Beach to Point Lookout, L. I. (Mayer). Laughing Gull was still present at Sands Point, L. I., on December 4 (Cruickshank). Though Kittiwakes did not come down in the numbers they did last year, a few were seen—25, on October 22, Montauk (Helmuth); 5, November 26, Jones Beach, L. I. (Cruickshank); 8, Long Beach, L. I., December 6 (Mayer); 1, Manasquan, N. J. (Watson). Skimmers were still about on November 20 at Barnegat Inlet, when 20 birds were seen (Watson). Razor-billed Auk, a lone Alcidæ record for the region, was noted at Eastchester Bay, Bronx, November 6 (Kramer). Snowy Owl, 1, the only record, December 11, Gilgo, L. I. (Cruickshank). Arkansas Kingbird, 1 on October 26, and 1 on November 12, Easthampton, L. I. (Helmuth). House Wren, 1, November 26, Easthampton, L. I. (Helmuth) is late for this species. Mockingbird, known from Montauk all October and November (Helmuth); from Oak Island, L. I., November 12 (Fleisher, Jacobson); 1, December 4, Van Cortlandt Park (Kramer); 1, Old Greenwich, Conn. (B. T. Brooks). Bicknell's Thrush, 1 found dead in the beach-drift at Easthampton in October (Helmuth). Northern Shrike, several reports during November from eastern Long Island, and especially from Montauk Point (Jacobson, Fleisher). Blue-headed Vireo, noted at Easthampton on November 2, 8, and 26 (Helmuth), seems to solve to a minor degree the paucity of this species in late September and early October in the region to the north of us. Philadelphia Vireo, at Easthampton, L. I., on October 11, is rather late (Helmuth). Black-throated Blue Warbler, feeding on the flies about the fish-boxes at Montauk Point on December 11, is surely the latest record of this species in the region, as well as the most unusual combination of terrain and species (Helmuth, McKeever, Sedwitz). Oven-bird, November 24 at South Mountain Reservation, N. J. (Rosenblum). Connecticut Warbler, 1, November 26, Easthampton, L. I. (Helmuth).

In the field of more exotic birds are the following records: Yellow-billed Tropicbird, 2 birds found dead along the beach of Easthampton, L. I., in October (Helmuth); Yellow-crowned Night Heron, 1 adult and 1 immature at Watermill, L. I., on October 16 and 17, the latest dates for this bird in the records (Helmuth); Dickcissel, 2, October 22 and 1, October 25, Watermill, L. I. (Helmuth); Lark Sparrow, 1, October 8, Easthampton, L. I. (Helmuth).—Walter Sedwitz, *New York, N. Y.*

Philadelphia Region.—The mild weather of late fall ended abruptly on November 24, when falling temperatures, accompanied by sleet and snow, ushered in real winter weather. Clear weather on the 25th was followed that night by a heavy snowfall.

Flocks of migrating Common Loons, on November 24, over southeastern Pennsylvania were overcome by the sleet and dropped in a helpless condition at many points. Reports from Fort Washington, Paoli, Ridley Park, and West Chester, Pa., indicate that the migrants were flying in a southwesterly direction when grounded. None were reported east of the Delaware River, while at Denver, Pa., 2 birds (Marburger), and Lancaster, Pa., 1 bird (Eickler), apparently marked the western rim of the flight. The bird observed by Eickler was actually seen to fall and had ice-coated wings.

Albert Conway, West Chester, Pa., reports traveling 150 miles in his car and collecting and banding 24 Loons. A. M. Clark reported at least 100 down within 10 miles of Chestnut Hill, Pa. Many Loons crashed through greenhouses, doubtless mistaking the glass for water. Among the group taken to the Philadelphia Zoölogical Garden was one Red-throated Loon. From records at least 200 to 300 birds were grounded. A few other species reported as affected in the same way by the storm were Coot, Ring-necked Duck, Red-breasted Merganser, and Pintail.

The Avocets at the Government Wildlife Refuge, Fort Mott, N. J. (mentioned in the last report), were present until November 24, when freezing weather drove them out. Where, except in a wild-life refuge, could two such rare visitors have lived in safety for two months?

The wild-fowl census taken by A. M. Clark at Fort Mott, N. J., on October 22, resulted as follows: Black Duck, 45,000;

Baldpate, 2; Pintail, 35,000; Green-winged Teal, 22; Blue-winged Teal, 9; Shoveller, 2; Wood Duck, 3.

Other records of interest: West Chester, Pa., November 24 to December 4, Palm Warbler (Gordon); November 13, Whistling Swan (Roberts and others). Chesapeake City, Md., November 12, Black Vulture, 5. Cecilton, Md., November 12, Gadwall, 19 (Gordon and Conway). Penn Manor, Pa., November 20, Little Blue Heron, 1. Atlantic Ocean off Island Beach, N. J., November 27, Black Guillemot, 1. Island Beach, N. J., November 27, Snow Bunting, 14 (Newman and Lindauer). Wyncote, Pa., December 2, Dickcissel, banded (Pepper). Erdenheim, Pa., November 25, Redpoll, 3 (I. Starr, III). Chestnut Hill, Pa., November 25, White-crowned Sparrow, 2 (Clark). Tinicum, Pa., November 6, Ruddy Duck, 78 (Q. Kramer). Cape May, N. J., November 10, Saw-whet Owl, 1; Goshawk, 1 (Kuerzi). Springton, Pa., November 16, Gadwall, 3 (Debes). Fish House, November 19, Short-eared Owl, 1 (Corn and Jacobs). Plainsboro, N. J., December 8, White-crowned Sparrow, 1. Barnegat Inlet, December 2, Piping Plover, 1 (Watson). Bombay Hook Refuge, Del., December 4, Snow Goose, 60 (Buckalew). At this Refuge, September 24, 1937, Avocet, 2 (Herholdt). This is a last-year's record but is of more than passing interest. Delair, N. J., December 11, Rough-legged Hawk, 2 (Haines). Peermont, N. J., October 23, Golden Plover, 1. Ocean View, N. J., Yellow-crowned Night Heron, 2 (Street and others). Fort Mott, N. J., November 6, Snow Bunting, 3 (Lindauer). Bridesburg, Pa., November 17, Siskin, 7 (Yoder). Hooded Merganser—numerous records indicate a considerable increase in the number of these birds. Largest flock reported at Ocean View, N. J., December 18 (Street and others).—JULIAN K. POTTER, *Collingswood, N. J.*

Washington (D. C.) Region.—The period included in the months of October and November, 1938, were, in the Washington Region, rather dry and unusually warm. There was, however, an unprecedented cold spell in late November, accompanied by 7 inches of snow, which is a November record for Washington.

Birds during these two months, however, seemed to be about normal, although the warm weather undoubtedly induced some species to remain a little later than is ordinary.

Apparently, the Black Vulture, which not so very many years ago was an almost unknown bird in this region, continues to increase in numbers, and often several are noted together. W. H. Lawrence saw 5 at Great Falls, Md., above Washington, on November 20; and the species has been reported a number of times in other localities.

The European Starling which has become enormously abundant in the vicinity of Washington, has, this autumn, repeated its seasonal invasion of the city, and great flocks are to be seen every day, particularly late in the afternoon as they come in from all the surrounding country and swirl about the parks and the buildings, seeking resting-places for the night. The presence of so many of these birds in Washington has become a real problem.

Another bird that, however, is entirely welcome to the city streets and parks, is the Mockingbird, which lives here in small numbers the year round. At this season it is not in song, and is not otherwise noisy or conspicuous.

An interesting occurrence is reported by W. Perrygo, from Oxon Hill, Md., on November 26. He saw there what he describes as about 1000 American Pipits, a very unusual number for this region at any time of year.

Mr. D. R. Gascoyne noted an early appearance of the Whistling Swan, near Lower Marlboro, Md., on the Patuxent River. Here, on October 1, he saw two flocks of adults, one of 18, and the other of 25 individuals.

The Roaches Run Sanctuary, on the Virginia side of the Potomac River, near Washington, continues to be a great attraction for water-birds of various kinds. On November 23 there were numerous Black Ducks, Lesser Scaups, and a few Pintails and Mallards at this place, together with many Ring-billed and Herring Gulls, as is usual at this time of year. An examination of the river on that day, however, from Washington to Mount Vernon, a distance of some 12 miles, showed an almost entire absence of water-fowl, the

only birds seen being a few Black Ducks along the shores. This is extraordinary at this time of the year, since there should be large numbers of these birds here at this time. Perhaps the unseasonably warm weather of October and the early part of November has retarded the southward migration of water-fowl. It is to be hoped that this is the explanation, in so far as the scarcity of birds on the Potomac River is concerned. While the Roaches Run Sanctuary is now a very desirable addition to the attractiveness of the region for water-birds, it is unfortunately true that the destruction of other favorable places in the vicinity is imminent, due to airport and other construction now in prospect.—HARRY C. OBERHOLSER, *Biological Survey, Washington, D. C.*

Pensacola (Florida) Region.—Light rains late in November and early in December put an end to the widespread brush and grass fires, but the drought of the past two periods has not yet been truly broken. Pond-sites are still dry and river- and creek-levels low. Temperatures have been normal. The first freeze to reach down to the coast occurred on November 25.

The present period has been a particularly good one for small land-birds, both as to variety and abundance, but the unprecedented scarcity of shore-birds reported in the preceding period still prevails. My absence from the region for the greater part of November caused me to miss the water-fowl migration. The numbers of Ducks in residence for the winter, however, seem more satisfactory than for several years past.

Migration casualties on the Pensacola Bay bridge continued through October. On October 30 more than 40 specimens of 12 species were picked up. Among them were: another Yellow Rail (the fifth for the state), a Tennessee Warbler, and the latest Parula and Magnolia Warblers ever recorded from this region. A single male 'English' Sparrow picked up more than a mile from shore, literally surrounded by dead Swamp and Savannah Sparrows, would seem to have been in their company before they all met a common fate. The situation was suggestive of a true migratory tendency on the part of a 'foreigner' that had been reputed to take long trips only by train or boat.

Outstanding events of the period include: the presence of a White-crowned Sparrow on October 16; the arrival of a Dickcissel at Century on October 26 (Mrs. A. L. Whigham); and the appearance of 2 Rufous Hummingbirds in the city of Pensacola on November 28 (Mrs. Max McClanahan). The White-crown was only the second ever known in this region and one of the very few in the state. A single Dickcissel spent the whole of last winter in Mrs. Whigham's garden, but the bird of this year stayed only until November 28. The Rufous Hummingbirds appeared at the same clump of red flowers that has attracted them for three years of the past four, but a hard freeze the same morning killed the flowers and the birds were not seen again.

An interesting sidelight on the local behavior of wintering Starlings is their habit, not noticed before, of roosting in the marshes. On November 5 a flock of 300 Starlings was seen in the marsh at sunset with huge flocks of Red-wings.

As in the preceding period, reports from Mrs. A. L. Whigham indicate that several species appear at Century (only 40 miles inland) from one to two weeks earlier than they are seen in the coastal area. Of these, Brown Creeper and Field Sparrow, first seen on October 16, were earlier than ever before recorded in this region; and White-throated Sparrow, seen the same day, equaled its previous date. Other species listed by Mrs. Whigham and not seen on the coast for at least a week after include: Myrtle Warbler, October 17; Chipping Sparrow, October 22; Robin, October 28; Goldfinch, November 19; Purple Finch (rare), November 28; and Cedar Waxwing, December 4. A single Woodcock, rare in this region, took up residence in Mrs. Whigham's rose-garden on November 25. Species first seen in the coastal area include: Orange-crowned Warbler, October 16; Hermit Thrush and Golden-crowned Kinglet, October 23; and Loon, Vesper Sparrow, and Song Sparrow (rare), October 30.

Of departing migrants, Mrs. Whigham's list from Century includes several species of later-than-average dates of departure: Wood Pewee, Wood Thrush, and Olive-backed Thrush, October 18; Summer Tanager, October 20; Redstart, October 21; Scarlet

Tanager, October 24 (equals previous latest date); Indigo Bunting, October 25; and Ruby-throated Hummingbird, October 28. Late dates for some species in the coastal area are: Northern Water-Thrush, October 16; Chimney Swift, October 19; Nighthawk, October 22; and Barn Swallow, October 30. A single Fish Hawk on December 11 is the only one I have ever seen in the month of December, and was so much later than its usual departure date that it may have been wintering.—FRANCIS M. WESTON, *2006 E. Jordan St., Pensacola, Fla.*

Put-in-Bay (Ohio) Region.—Weather during the fall season continued in the main to be warm and dry. A short period of cold, windy weather began about November 15, and the first snowfall of any consequence occurred November 23 to 24. Following this there was a return to above normal temperatures, and the close of the period finds Lake Erie still open and most of the smaller inland lakes at least partly free of ice. Observers from whom reports have been received seem to agree that the open weather had relatively little effect on dates of arrival and departure of migratory birds. There are, however, a few unusually late records for shore-birds: Pectoral Sandpiper and Black-bellied Plover were seen at Toledo, October 29; Greater Yellow-legs, Red-backed Sandpiper and Semipalmated Sandpiper in the same vicinity on November 19 (Campbell). The Lesser Yellow-legs was present at Salem on November 6 (Baker), and there are December records for Killdeer from all quarters of the state.

Among the water-fowl there were also a few records of species that seem to have tarried somewhat beyond the normal. Thus a Blue-winged Teal remained at Put-in-Bay until December 13, and Wood Ducks were seen near Akron on December 4 (Danner). There are many December records for the Canada Goose, and a single Blue Goose was seen at Pymatuning Lake on December 11 (McLaughlin). The latter species was not noted this year in numbers comparable to those of 1937; the only large flock that has been reported contained an estimated 600 individuals and was seen on November 2 to 5 near Marion (Niemeyer, Hicks). In general the numbers of Ducks and Geese were disappointingly small throughout the fall season, and this is particularly true of Canvas-back, Redhead and Scaup. None of the reports at hand offer any evidence of increase in these species. By the close of the period the Black Duck was the most numerous Duck.

Perhaps the most conspicuous feature of the period in the Lake Erie region was the abundance of Bonaparte's Gull. At Put-in-Bay few were seen prior to November 1. After this date the numbers increased steadily and the peak was reached December 8 to 14. On the latter date it was estimated that there were not less than 3000 in the harbor. At the mouth of the Maumee, on December 4, Campbell found approximately 7500 individuals.

No Hawk flights of especial interest have been reported, but the Rough-leg seems to be present in many localities in the northern half of the state. Small flights of Rough-legs, together with a few Red-tails, were noted at Put-in-Bay on November 15 and 27. A Pigeon Hawk was seen at Yellow Springs on October 22 (Burr), and from Salem comes a report of a Golden Eagle observed at close range on November 6 (Baker). Some interesting data as to the relative abundance of several species of Hawks are supplied by Hicks, who reports that in Wood County, from November 15 to 18, the following Hawks were observed: Marsh Hawk, 27; Sparrow Hawk, 11; Cooper's Hawk, 9; Rough-leg, 6; Red-tail, 5; Red-shouldered Hawk, 3; Sharp-shinned Hawk, 2.

Among the passerine birds there seem to be no outstanding records to report. Transient species departed at about normal dates and in some cases perhaps a few days earlier than normal, despite the high temperatures. There have been no records of any unusual visitors from the North. In contrast with 1937 one notes a general scarcity of wild fruits, beechnuts, and cones.

A few noteworthy records: American Egret, O'Shaughnessy Reservoir, near Columbus, October 25 (Hicks); Franklin's Gull, near Toledo, October 30 (Hicks) and in the same locality on November 24 (Campbell); Short-billed Marsh Wren near Dayton, November 20 (Burr and Kalter).—C. F. WALKER, *Stone Laboratory, Put-in-Bay, Ohio.*

Minnesota Region.—After mild, almost balmy, weather during the first three weeks of October, with vegetation taking on a second growth, there came, on the evening of the 22d, a drop in temperature and a heavy wet snow all over the state, blocking roads and suspending communication generally. However, the snow and freezing temperatures were of brief duration and seasonable weather returned for a short period. November was a stormy month with heavy rains, floods, high winds, and several snow-laden wintery blasts from the northwest, sending temperatures in the northern part of the state far below zero. One of these near-blizzards toward the close of the month was credited as the "worst November storm for years." December was milder, with no subzero temperatures southward, but on the 14th the thermometer fell to 15 degrees below at Bemidji and 23 degrees below at Warroads on Lake of the Woods.

However, the cold periods being of brief duration, the general impression was that the fall was unusually mild and 'open.' There was little permanent snow in the northern part of the state and the ground was practically bare farther south up to December 15. Lake Superior was free of ice, the ice on the interior lakes unsafe or absent, and the outdoor skating rinks at Minneapolis were not opened until near the middle of December.

I cannot do better than let Mrs. Davidson of Minneapolis, who is afield so much of the time, tell of the fall and early winter happenings: "Mild weather, open lakes and abundance of food have combined to make the past two months as thrilling among the birds as any preceding ones. Diving Ducks were late in arriving but stayed long. Golden-eyes, Scaups, Ringnecks, the three Mergansers, Buffle-heads, Redheads, Coots, and 1 Holboell's Grebe on the final day remained in one of the city park lakes until December 13. On the following day nearly 100 Gulls, mostly Herring Gulls, stretched in a long line on the newly formed ice. On the little spring-fed pond at Fort Snelling some scores of Mallards, several Baldpates, 1 Black Duck, Gadwalls, and Green-winged Teal remained until December 11, and in reduced numbers to an even later date. On October 17 *hundreds* of Baldpates covered the big lake at the Fort and made a dazzling sight as 50 to 100 of them would rise and circle the lake, wheeling and banking in the sunlight. Glenwood Park has had a most interesting bird-population for the past few weeks. The red cedars are filled with their bright blue berries, and on November 28 I saw in one tree at the same time a Robin, a pair of Cardinals, two Purple Finches, two Golden-crowned Kinglets, several Bohemian Waxwings and one Pine Grosbeak feeding together till a pair of Blue Jays drove them away, when 2 Evening Grosbeaks at once took possession."

The following items are of interest: Robins remaining from Duluth southward; a Fox Sparrow, and 2 Doves in Chicago County on November 28 (Berthel); more Meadowlarks than usual in southern Minnesota; a wintering Flicker at Fairmont (Luedtke); a Mockingbird seemingly settled for the winter and feeding on an abundant crop of buckthorn berries at the residence of Mr. Breckinridge in northeast Minneapolis; Herring Gulls in the Mississippi River gorge, below the falls, on December 13; Golden-crowned Kinglets at Minneapolis (December 7, Trotter), and elsewhere; and Whistling Swans at Red Wing (Richard Bird) November 6. Evening and Pine Grosbeaks and Bohemian Waxwings have been reported in small numbers at Duluth, Minneapolis, and elsewhere.

The American Egrets remained in the Mississippi River Valley near Red Wing until the big storm of October 22. Mr. E. P. Nordeen, warden, writes: "The main flock of about 100 Egrets left between the 21st and 25th of October but there were 2 birds that stayed a few days or a week longer." Dr. Luedtke writes of the Martin County colony: "The Egrets left Martin County on the morning of October 1, when hunting for Ducks began. As soon as shooting started they departed for Iowa, only 2 miles away. I was on the spot expecting to see some of them shot but they were wise and never permitted anyone with a gun to get near them. They were not seen later as far as I know."

Dr. Edmund L. Warren, of St. Paul, reports seeing two flocks of Golden Plovers,

about 30 in each flock, near Benson, Swift County, on October 16. Prof. D. S. Brainard of the State Teachers College at St. Cloud writes that he saw a Townsend's Solitaire at that place on November 24. Records of this bird for Minnesota are still few in number.—Thos. S. Roberts, *Museum of Natural History, University of Minnesota, Minneapolis, Minn.*

Chicago Region.—A summary of weather data for the four months, August to November, follows (see introductory paragraphs of preceding two 'Season' reports): Temperature remained at or slightly above normal through August to mid-September, followed by a week of slightly subnormal temperatures; after this the recordings were again at or above normal till the last week of November, when a 6-day period of moderately subnormal temperature occurred. While the precipitation during August was only approximately two-thirds the normal amount, during September it rose to one and two-thirds times the normal due to a two-week period of almost daily rain, the heaviest of which fell during the first half of the period (September 7–14); the latter half, with slight daily precipitation, coincided with the first period of subnormal temperatures mentioned previously. Decidedly subnormal precipitation was recorded for both October and November, the total for the two months being 1.72 inches as against a normal 4.90 inches.

The late fall of 1938 will be remembered for the mildness of the weather; freezing spells have been moderate and short, and inland bodies of water have remained open through the close of this period. The result has been a pronounced delay in the southward movement of birds, particularly Ducks and shore-birds, and numerous species remained long after dates previously recorded as 'late' or 'very late.' This is well shown by the following table. (Previous reports have explained amply the manner of presentation.) It should be pointed out that with few exceptions, this table of late dates does not represent stragglers, but rather it records the last reported dates, previous to which the species had been observed repeatedly, often in several localities.

Loon	12–12	LP	Dreuth	11–19
Holboell's Grebe	12–16	LP	Dreuth	11–21
Horned Grebe	12–11	LP	Dreuth	11–29
Great Blue Heron	11–12	MS	Himmel	10–24
Black-crowned Night Heron	11–27	G	White	11–19
Black Duck	12–18	MS	Reuss	11–25
Gadwall	12–11	ML	Clark	——
Baldpate	12–18	MS	Reuss	11–29
Pintail	12–13	LD	McMaster	11–12
Green-winged Teal	12–11	ML	Clark	11–12
Shoveller	11–24	MS	Johnston	11–17
Wood Duck	11–24	MS	Johnston	11– 6
Redhead	12–16	LP	Dreuth	11–20
Ring-necked Duck	12–18	MS	Reuss	12– 3
Canvas-back	12–13	LD	McMaster	11–27
Buffle-head	12–16	LP	Dreuth	11–28
Ruddy Duck	12– 5	MS	Johnston	11–12
Hooded Merganser	12– 2	LP	Dreuth	11–16
Duck Hawk	11–21	MS	Johnston	10–15
Semipalmated Plover	11– 6	LP	Dreuth	10–28
Golden Plover	12– 6	LP	Nork	11– 5
Black-bellied Plover	11–26	LP	Dreuth	11– 6
Wilson's Snipe	11–22	LP	Dreuth	11–13
Greater Yellow-legs	11–20	W	White	10–28
Pectoral Sandpiper	11– 7	LP	Nork	10–12
Baird's Sandpiper	10–17	LP	Palmquist	10–11
Least Sandpiper	10–26	LD	McMaster	10– 2
Red-backed Sandpiper	11– 7	LP	Nork	11– 6
Semipalmated Sandpiper	10–17	LP	Palmquist	10– 1
Sanderling	11–26	LP	Dreuth	11– 6
Franklin's Gull	11–20	ML	Clark	——
Forster's Tern	11– 7	LP	Nork	10–12
Common Tern	11–13	LP	Dreuth	10–28
American Pipit	11– 5	MS	Johnston	10–18
Magnolia Warbler	10–17	LP	Nork	10– 9
Chestnut-sided Warbler	10–17	LP	Nork	9–29
Black-poll Warbler	10–27	LP	Dreuth	10– 3
Redstart	10–31	LP	Dreuth	10–17
Rose-breasted Grosbeak	10–15	MS	Johnston	10– 9
Leconte's Sparrow	10–15	MS	Johnston	10–12
Field Sparrow	11–17	LP	Dreuth	10–31
Fox Sparrow	11–20	MS	Clark	11–19
Swamp Sparrow	11–27	MS	Clark	11–18

Key to localities: LD, Lake Delavan, Wis.; LP, Lincoln Park; ML, Maple Lake, Willow Springs; MS, McGuiness Slough; G, Glencoe; W, Wauconda.

The period is not without its rarities, coming chiefly from the notes of Mr. Will Dreuth, who is in the field almost daily in a surprisingly productive area. From Lincoln Park he reports White-winged Crossbill on October 28, Purple Sandpiper on November 30, and American Scoter on December 16; in addition to these, Surf Scoter on December 5 to 11, and European Little Gull on November 15 to December 11, at Lincoln Park (Dreuth, Nork, Clark). Besides the record of the Holboell's Grebe given in the above

table, 3 individuals remained at the same locality from November 22 to 26 (Dreuth, Clark).

Correction: Cancel record of Northern Phalarope, May 3 (Season Report CXXII). —RUDYERD BOULTON and FRANK A. PITELKA, *Field Museum, Chicago, Ills.*

St. Louis Region.—The mild weather that marked the previous season has continued on through November and December with lowest temperature, reached but once, of 15 degrees above zero. Snowfalls were few and light, excepting in western Missouri, and the rainfall less than normal. As a possible result the departure dates of many species have been late.

Ducks arrived late in the St. Louis area and were noticeably scarce during the hunting season, but the continued moderate weather conditions seem to be holding many species here long overtime, for Mallards in considerable numbers, Pintails, Blue-winged Teal, Ring-necked Ducks, and Greater and Lesser Scaup are still here in the closing days of December. Reports by Wayne Short and Miss L. R. Ernst, who have been keeping a close checkup over the Duck areas, did not, up to November 25, show what could be considered a genuine passage of them. On that date they reported Gadwalls in goodly numbers, fair-sized flocks of Mallards and Lesser Scaups at near-by Horse Shoe Lake. Their best sight record, outside of Ducks, on November 21 at that place, was an American Golden Plover feeding at the lake where the temperature was 26 to 28 degrees. The Golden Plover had also been previously seen at Creve Coeur Lake on October 14, 20, 25, and November 2. Of the 5 Red-backed Sandpipers that had been seen at Creve Coeur Lake on October 6, 7, and 9, 2 were seen on October 20 and again (a last date) on November 2. This makes the second fall record appearance of these birds in Missouri. Other late dates were: Least Sandpiper, November 16; a Cormorant, December 4; a Goshawk at Horse Shoe Lake, November 20; a King Rail, November 30. A female Old-squaw was also seen on December 4, and was kept under observation with a 40-power telescope for closer identification.

At Creve Coeur Lake, on December 21, Wayne Short and Frank Watson counted 125 Lesser Scaup, 1 Greater Scaup, 50 Mallards, 4 Black Ducks, 15 Pintail, 1 Wood Duck, 35 American Golden-eye, 2 Hooded Merganser, 40 American Merganser, and 15 Coot, an unusually late date for the last.

From Lebanon comes George E. Moore's report commenting on the open winter and late records there: Field Sparrows in numbers; the Blue Heron, November 25; Red-winged Blackbirds, December 10. A wintering Brown Thrasher, observed November 25 and 27, was their first winter record in 20 years of bird-watching. Intervals of moderately cold weather brought the Geese and Ducks over in successive waves, many passing over without stopping, so that while no great numbers were seen at one time, the total was undoubtedly an increase over the past few years. Blue and Snow Geese were noted November 6; Pintail, Blue-winged Teal, and Ruddy Ducks, November 14; Scaup, Golden-eye, Mallard, and American Merganser, November 23. The Wilson's Snipe is yearly becoming more rare near Lebanon. Following the failure of the acorn crop, local observers there are consistently reporting a shortage of such commonly noticed birds as the Jays, Titmice, and Woodpeckers. Juncos and Tree Sparrows abound in unusual numbers; the White-throated Sparrows were plentiful until November 15. White-crowned, Leconte's, and Swamp Sparrows, November 13; Vesper and Lark Sparrows, November 2; Fox Sparrows, November 24, but most of them have moved on. A Prairie Chicken (first record of this specimen) was flushed twice on December 3, although it is to be found in Dallas County, 30 miles away. A Sora Rail, in apparent good health, was picked up on a busy street in Lebanon and later released.

Tom Kirksey, while at Fayette, advises of the positive identification of a Whooping Crane 7 miles south of Fayette on a small pond, which he watched long and carefully with 10-power binoculars at a distance of 100 yards before the bird took wing. He also sighted 3 Swainson's Hawks and one Goshawk 3 miles out from Fayette, and a flock of Prairie Chickens near Centralia on November 12.

Ducks seem to have been more plentiful in the Kansas City section, for J. W. Cunningham saw 1000 Ducks on November 11,

of 14 species. Mallards, Scaup, Green-winged Teal, Baldpate and Ring-necked Ducks were numerous; Pintail, Gadwall, Black Ducks, Ruddy Ducks, Shoveller, Blue-winged Teal, Canvas-backs and Redheads in smaller numbers. Again, on November 18, about 700 of about the same species, and 1 lone Golden-eye.—STERLING P. JONES, *Webster Groves, Mo.*

Rio Grande Delta Region.—This period has averaged somewhat cooler than usual but the rainfall was quite deficient. The drought has caused a concentration of certain birds in the flooded areas near the river. On the ponds along the river and on the resacas we find about twice the number of Ducks observed a year ago.

Several unusual items have been reported during this period. Starlings are fairly common throughout the region this winter for the first time. Flocks of from 20 to 50 have been seen daily about the residence section of Harlingen since the first week in December. Sage Thrashers and Say's Phoebes are wintering in several times the usual numbers in Cameron County. A Magnolia Warbler was observed in Olmito on December 4. A great scarcity of Franklin's Gulls has been noted by all observers. Whereas there are usually several flocks passing over daily throughout the late fall, none has been seen this year by Mr. Hale. Only one flock was reported for Hidalgo County, only two or three small flocks were observed in Cameron County, and no winter birds have so far been listed.

The male Rose-throated Becard which has been mentioned in several earlier reports is apparently non-migratory. It has now been about fifteen months since first observed by the writer and it is still present. If the bird molted in the spring there was little if any change in the colors, but there was quite a change this fall. All trace of reddish coloration has gone from the wings and tail, and these parts now look rather like those of a Phoebe. The underparts are still white except for the bright rose throat-patch. This fact would seem to fix the subspecies with certainty. The 'territory' occupied by this bird is about 50 yards wide and 100 or more yards long. It is worried quite a bit by Derby Flycatchers in the same area. Couch's Kingbirds and Green Jays also seem to bother the bird to a certain extent. Although the Becard eats insects and looks very much like a member of the Flycatcher family, it has not been observed to perch in an open space and fly out for its prey as do the Flycatchers. It is also more timid and much harder to approach than most Flycatchers, and can usually be found only by following its characteristic call.

The writer found a juvenile Mexican Jaçana at the fish-hatchery near Olmito on October 2, and one was later reported by Leora Pomrenke near Harlingen. Since no adults were found in the region this summer, this would seem to indicate that the juvenile of this species is given to wandering to the North in the fall.

Migration dates for the Mission area sent in by Mr. Hale are as follows: October 16, Fulvous Tree-duck, Baldpate, Shoveller, Ruddy Duck; October 17, American Pipit; October 21, Black-throated Green Warbler, Myrtle Warbler; October 23, Canvas-back, Redhead, Mallard, Ring-necked Duck, Northern Flicker; October 28, Burrowing Owl, Orange-crowned Warbler, White-crowned Sparrow, Song Sparrow; November 4, Ruby-crowned Kinglet, Brewer's Blackbird; November 6, Cinnamon Teal, Robin, Olive-backed Thrush, Red-shafted Flicker; November 8, Bluebird; November 9, Golden-crowned Kinglet; November 11, Long-billed Curlew, Tree Swallow, Savannah Sparrow; November 13, White-necked Raven, Western Field Sparrow; November 22, Sharp-shinned Hawk, Cedar Waxwing, Western Meadowlark, American Goldfinch; November 24, Say's Phoebe; November 29, Yellow-bellied Sapsucker; December 4, Hermit Thrush, White-throated Sparrow, Sprague's Pipit.

Some dates sent in by Mrs. Denzer from Alamo are: November 25, Robin; November 28, Cedar Waxwing; November 30, Audubon's Warbler.

A few additional migration dates from the Harlingen area are: October 16, Savannah Sparrow; October 30, Northern Flicker; November 19, Hermit Thrush, Robin; December 4, Sandhill Crane, Sage Thrasher; December 11, Say's Phoebe.—L. IRBY DAVIS, *Harlingen, Texas.*

San Francisco Region.—Central California has had cold nights this fall but warmer and sunnier days than usual. Rainfall for the period was considerably under normal and less than half the amount of a year ago. This combination affected birds by allowing a greater advance in growth and development of plants; many flowers were in bloom by December. The new buds and green grass supplied much forage, especially for the flocks of Fringillidæ. Fruit-eaters, however, fared less well, for a hard freeze before mid-November caused the coffeeberry crop to drop quickly and terminated the season for some other fruits. The original supply had been considerably less than that available a year before. The contrast was marked in the mistletoe which in one area at least bore no fruit this year. At this place land-birds were conspicuously less numerous than a year ago. For example, Band-tailed Pigeons were present daily in large numbers until the beginning of the shooting season last year, but this year only scattered small groups were seen, and few shots were heard in the season instead of the fusillade of 1937. But there was a shortage also of kinds of birds that are not shot.

The book on native woody plants, emphasizing their wild-life values, just issued by the Soil Conservation Service, practically demands that bird-watchers record their observations of birds eating fruits. It shows how meagerly these records have been made available. Our knowledge of this subject should be many times greater than it is, especially in California with its large population of vegetation-dependent birds.

Mrs. Allen's report shows trends in the fall bird-life of our part of the state. From October 17 to 22, through a warm spell, Audubon's Warblers were very abundant. This was the most abundant species at Cordonices Park on October 25, another warm day. There was rain all night on November 9, followed by cold, the season's first frost at Berkeley, and a sudden decrease in the Warblers. They were still absent on the 13th. On November 15, a warm, clear day, she noted land-birds to be abundant at Orinda and water-birds much increased at San Pablo Reservoir. She estimated that on November 20 approximately 10,000 birds were present on the Mountain View marshes.

A few only of many significant reports of birds on water in the region are recorded here: Black-vented Shearwater, 20 on Carmel Bay on November 13 (Williams); White Pelican, about 60 in flight over Berkeley Hills on October 25 (Allen), 33 at Dumbarton Bridge on November 16, 7 at Bodega Bay on November 28, and 13 at Sears Point Road, December 12 (Parmenters); Brown Pelican, only a few (P.); American Bittern, one at Carmel River mouth on November 17 (W.—first record for this observer on the Monterey Peninsula); Least Bittern, 1 captured by hand on Dillon Beach, November 12 (B. Bowers); Canada Goose, many on San Pablo Reservoir, October 20 (A.), 60 on November 6 (Kelly), 5 on October 24 at South Crystal Springs Lake, 458 counted on November 15 on three San Mateo County reservoirs (P.); Black Brant, 11 on Tomales Bay on November 28 (P.); Gadwall, 6 on Carmel River lagoon on November 29 (W.); Green-winged Teal, 176 on Sears Point Road on December 12 (P.); Harlequin Duck, a male at Cypress Point on November 4 (W.); Hooded Merganser, male and female at El Estero, Monterey, on December 1 (W.); American Merganser, one at Carmel River lagoon on November 29 (W.); Lesser Yellow-legs, one at Mountain View marshes on October 25 (A.), 2 at San Mateo Bridge on November 22 (A.); Knot, 7 at San Mateo Bridge on November 16 (P.), latest previous record by same observers, November 11, 1936.

A few land-birds have been reported on late dates or in out-of-the-ordinary places, as follows: Allen's Hummingbird, last seen in Golden Gate Park on October 9 (Stephens); Pygmy Nuthatch, Golden Gate Park, October 20 and November 8 (S.); House Wren, Santa Cruz Mountains, San Mateo County, November 14 (Sumner), Oakland, December 7 (Aldrich), Berkeley, November 21 (Allen); Western Gnatcatcher, Berkeley, December 8 (Allen); Golden-crowned Kinglet, Monterey, December 1 (W.); Pileolated Warbler, single birds noted in San Francisco on October 24 (Michael) and November 3 (Stephens); Harris's Sparrow, 2 in North Oakland on November 22 and 1 on Seminary Court on November 29 (Brocks).—JEAN M. LINSDALE, *Museum of Vertebrate Zoölogy, Berkeley, Calif.*